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OPEL MANTA 2.0 E

VDT-I-OPE 019 En

REKORD 2.0 E

8.1981

L-Jetronic 2nd. generation

Vehicles manufactured as from 9.81

With the above mentioned types of vehicle Opel are introducing the L-Jetronic of the 2nd. generation. The difference from the existing L-Jetronic systems is not the method of operation of the injection system, but the design of the control unit and of the injection valves.

Control unit (0 280 000 3..)

- new electronic construction
- new plug and socket, 25 pin
- new housing

Injection valves (0 280 150 2..)

- brass-wire coil with higher resistance

Testing possibility L-Jetronic II

From February 1982 a Universal tester will be available to the After-Sales Service Organization. The L-Jetronic II and other new injection systems can be tested with this tester.

Urgent cases for the After-Sales Service

If problems should arise on vehicles with L-Jetronic II during the period prior to the availability of the Universal tester, please contact KH/VKD 2.

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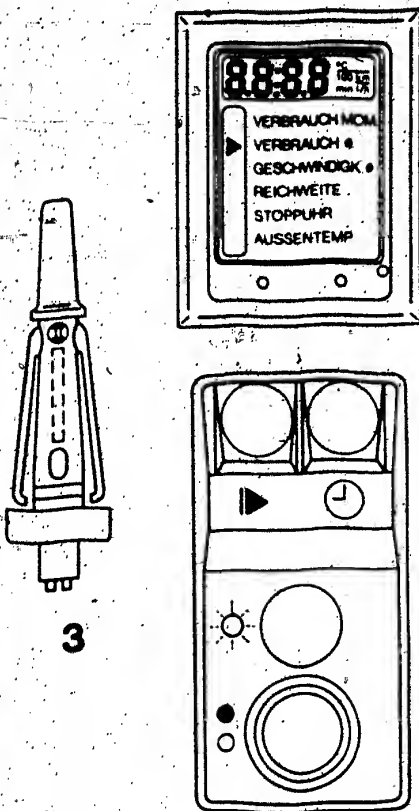
OPEL SENATOR /- MONZA

Supersedes 2.1982 edition

with new product
trip computer (on-board computer)

As from February 1982 Opel is delivering the Senator and Monza models with trip computer either as standard or as an optional extra, depending on the version.

This consists of the following Bosch components:



- 1 Trip computer with control and evaluation electronics.
Fitted in the instrument panel.
- 2 Keyboard for trip computer.
Fitted to the right of the driver's seat.
- 3 Temperature sensor (NTC resistor in holder) for outside temperature.
Fitted at the front under the bumper.

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The following functions can be called up on the keyboard and read off on the display unit:

1. Display-unit lighting
2. Outside temperature
3. Time
4. Stopwatch function
5. Actual fuel consumption per 100 km
6. Average fuel consumption per 100 km
7. Average speed traveled
8. Distance that can be covered with actual fuel consumption

The following signals are used as a basis of measurement:

1. Resistance of the NTC resistor in the temperature sensor (Bosch)
2. Injection time t_i of the L-Jetronic (Bosch)
3. Speed signal from the speedometer (Opel)
4. Fuel-level-sensor voltage (Opel)

The time and stop-watch functions are produced internally in the trip computer. These are processed with other signals in the trip computer in order to calculate functions 6, 7 and 8.

Please direct questions and comments concerning the contents to our authorized representative in your country.

OPEL REKORD DIESEL 2.0 and 2.3 D
with VE..F.. distributor-type fuel-injection
pumps L 28 and L 37

VDT-I-OPE 021 En

3.1983
(Replaces Ed. 1.1982)

Cold start difficulties

Cold start difficulties occasionally occur in the above-mentioned vehicles.

Remedy

Correct the start of injection (advanced adjustment) in the starting range by fitting a modified timing-device cover with a 2 mm collar. Conversion can be carried out without removing the fuel-injection pump.

Procedure

1. Remove the vacuum pump.
2. Check the start of delivery and correct, if necessary:
 - 2.0 l : start of delivery = 1.04 mm after BDC, engine TDC
 - 2.3 l : start of delivery = 0.93 mm after BDC, engine TDC
3. Exchange the original timing-device cover 1 461 074 302 (pressure side) for the modified timing-device cover KDEP 1129 (see drawing 1). Before fitting, this modified cover must be marked with your workshop designation.

If the conversion is made with the pump removed, then the pump must be timed to the engine as follows:

- 2.0 l : start of delivery = 1.30 mm after BDC, engine TDC
- 2.3 l : start of delivery = 1.24 mm after BDC, engine TDC

The start of delivery given above (1.30 mm and 1.24 mm) is therefore the start of delivery of the distributor-type fuel-injection pump with new timing-device cover.

The modified timing-device cover KDEP 1129 can be ordered outside of Germany from your RG/AV.

DM 3,50 per item - minimum purchase 10 items

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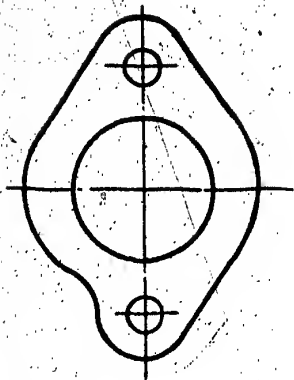
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The cover (see drawing 2) can be user-fabricated as follows:

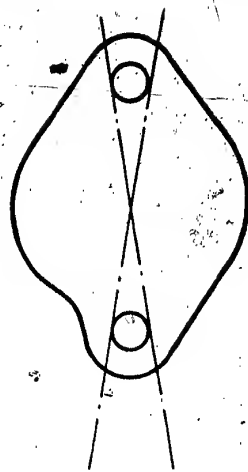
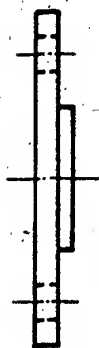
1. Drill out the center of a steel disk (dia. 22 mm x 2 mm thick) to a diameter of 6mm. Drill and countersink holes for M6 countersunk-head screws on one side.
2. Drill out the center of the original cover 1461 074 302 to a diameter of 6 mm.
3. Attach the steel disk to the inside of the timing-device cover using suitable countersunk-head screws (M6 x 10), snap rings and nuts sealed with Loctite.

Costs

This modification is to be charged to the customer.



Drawing 1



Drawing 2

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OPEL KADETT DIESEL, ASCONA DIESEL
Distributor-type fuel-injection pump
with special overflow throttle

Distributor-type fuel-injection pumps (VE) for Opel Kadett and Ascona Diesel are not fitted with overflow throttles (Fig. 1), but with overflow throttle fittings (Fig. 2 - Opel part).

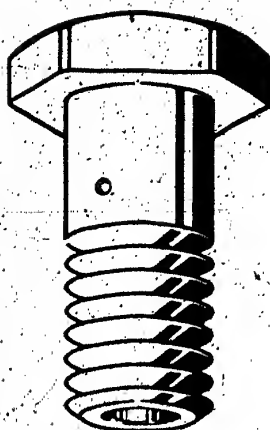


Fig. 1

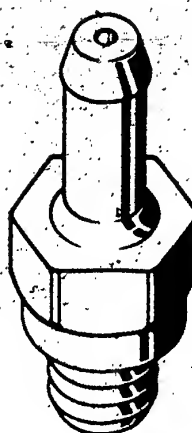


Fig. 2

Before testing and setting VE pumps, the overflow throttle fitting (Opel part) must be removed. To do this screw in the overflow throttle according to the service-parts microfiche (marked with "out") and test or set the pump with this. Finally exchange the Bosch overflow throttle again for the overflow throttle fitting (Opel part).

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Electrical equipment

OPEL SENATOR, MONZA
WITH TRIP COMPUTER
Elimination of illumination button
in operator control panel

VDT-I-OPE 024 En
4.1984

As of the start of trip computer models 0 263 001 018, ..020 (with Siemens microprocessor) their illumination is switched on automatically with "ignition ON". There is no longer any illumination button on the operator control panel.

With trip computer models 0 263 001 004 / 005, ..012/013, ..016/017, ..018/019 with illumination button on the operator control panel, the illumination can also be switched on and off with "ignition ON".

The trip computer models 0 263 001 020, ..021 have no illumination button on the operator control panel and can replace trip computer models 0 263 001 004/005, ..012/013, ..016/017, ..018/019. Apart from the illumination button on the operator control panel these trip computers have the latest technology regarding measurement of tank level, range (miles to empty) indication, automatic refueling detection (also less than 5 l), immediate indication of average speed after reset etc.

As of mid 1984 the trip computer models 0 263 001 000/001, ..002/003, ..006/007, ..008/009, ..010/011, ..014/015 can be replaced by the new trip computers 0 263 001 022, ..023 (without illumination button on operator control panel). Depending on the previous version, the illumination is switched on and off with "ignition ON" or with "lights ON".

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If the customer expresses his desire for a trip computer to be converted so that the illumination comes on with "ignition ON" instead of with "lights ON", this is possible by connecting terminal 15 instead of terminal 58 to the plug of the trip computer wiring harness.

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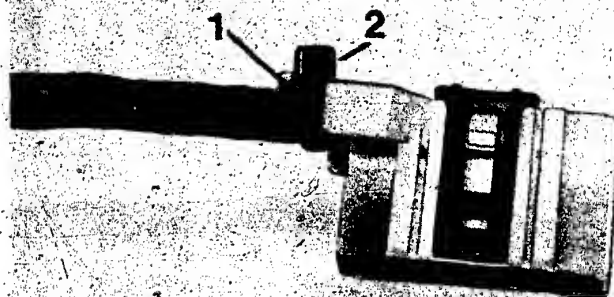


Electrical equipment

OPEL SENATOR / MONZA 2.5/3.0 l
Modification to wiring harness when
replacing trip computer

VDT-I-OPE 025 En

4.1984



- 1 = Handle cover of trip computer plug (26-pin)
- 2 = Clamping band

When replacing trip computers 0 263 001 000/001, ..002/003, ..006/007 ..008/009, ..010/011, ..014/015 with versions ..022/023, the original Opel wiring harness must be converted as follows:

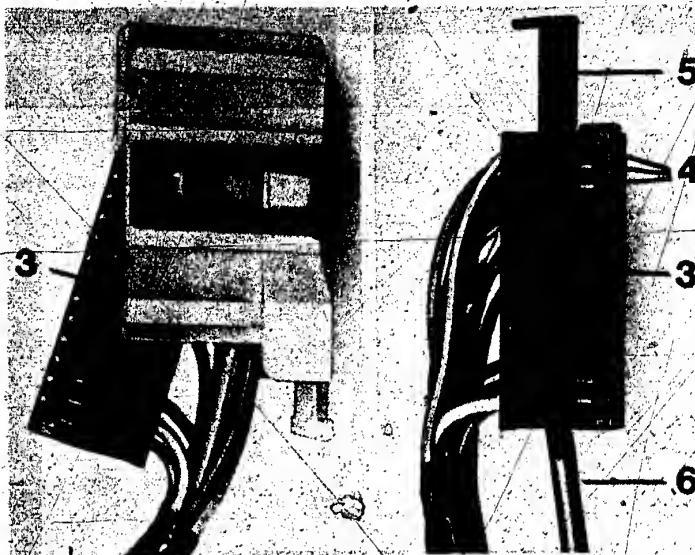
- Cut through clamping band (2) on handle cover (1) (see picture).

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3 = Contact support 5 = Locking piece
4 = Minitimer 6 = Screwdriver

- Pull contact support (3) out of handle cover.
- Using a thin screwdriver (6), press locking piece (5) out of contact support (3).
- Insert code lead into trip computer plug in accordance with the following table (required as external wiring-harness coding for trip computers 0 263 001 022/023).

2 code leads with attached minitimers are enclosed with the aftermarket versions of the trip computer. In addition, a new cover for the operator control panel (without illumination button) is enclosed. It can be changed after loosening 3 screws on the underside of the operator control panel.

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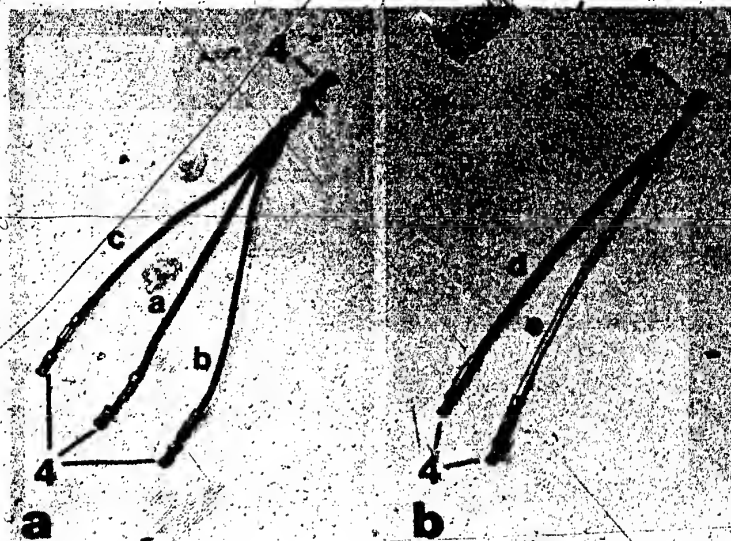


Fig. a = Code lead 1 Fig. b = Code lead 2

4 = Minitimer

a = Blue, b = Green, c = Red, d = Black, e = white

Code lead 1 is required for detecting Jetronic (L/LE2),
no. of cylinders (4/6) and pressure (2,5 - 3.0 bar).

Code lead 2 is required for detecting distance/turns
ratio.

Motor Vehicle Service Information

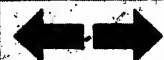


Table for installation of code lead 2 in trip computer plug

Trip computer model being replaced		Code lead 2 (2-pin) Common mini-timer to plug loc.9		Indicated version code in trip computer during "Test"	
Bosch Part No.	GM Part No.	Black lead to plug loc.8	White lead to plug loc.10	Senator	Monza
0 263 001..	90148..				
000/001	630	o	x	1033	1025
002/003	629	o	x	1037	1029
006/007	949	x	o	521	513
008/009	948	x	o	520	512
010/011	888	o	x	1032	1024
014/015	654	o	x	1038	1030

- = Additional code lead not necessary
- x = Connect to code leads
- o = Disconnect code leads

After installing the code leads, re-insert locking piece and assemble wiring harness plug.

Secure cable exit by means of clamping band on handle cover.

Correctly set model switch Senator/Monza on underside of trip computer.

After installing the trip computer, it is possible to check by means of the version code whether the code leads have been correctly connected:

Simultaneously press the 3 operator buttons for at least 1 second. The version code appears. Simultaneously release operator buttons again. Compare version code with table above.

Motor Vehicle Service Information



Table for installation of code lead 1 in trip computer plug

Trip computer model being replaced		Code lead 1 (3-pin) Common minitimer to plug location 3		
Bosch Part No.	GM Part No.	Blue lead to plug loc. 19	Red lead to plug loc. 18	Green lead to plug loc. 17
0 263 001..	90 148..			
000/001	630	x	o	o
002/003	629	x	o	x
006/007	949	x	o	o
008/009	948	-	-	-
010/011	808	-	-	-
014/015	645	o	x	x

- = Additional code lead not necessary

x = Connect to code leads

o = Disconnect code leads

Motor Vehicle Service Information



Electrical equipment

OPEL ASCONA/KADETT
With 1.6 N/S/SH AND 1.8 E-ENGINES
Destruction of ignition distributor cap
and rotor.

VDT-I-OPE 026 En

9.1984

On ignition distributors 0 237 021 009, ..010, ..011, ..015, ..021, ..022, ..023, 0 237 026 055, ..007, 0 237 504 001, ..002 and ..005 the diaphragm of the vacuum advance unit can crack due to nitrogen oxides and as a result leak.

Consequences:

- Engine cutout and misfiring during acceleration.
- Increased fuel consumption
- Fuel vapor penetrating into the distributor via the vacuum advance unit can cause an explosion, because this type of distributor cap does not have any vent slots. That destroys the ignition distributor cap and the ignition distributor motor.

Remedy:

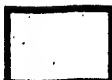

- Check the vacuum advance unit for leaks.
 - Take out and replace the defective parts.
- As of FD 446, all ignition distributor caps in use have slots.
The part number is the same.

Warranty:

Customary warranty period.

No claims will be honored after expiration of the warranty period.

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OPEL SENATOR/MONZA
WITH TRIP COMPUTER
Incomplete display

Electrical equipment

VDT-I-OPE 027/En

11.1984

The following faults may occur in trip computer
0 263 001 001-019, installed in the Senator/Monza:

Incomplete figures in display, segments fading slowly
or are not present.

Possible causes of trouble:

1. Starter battery not firmly connected.
2. Brief interruption of supply voltage.
3. Sharp voltage drop when starting with weak battery.
4. Temperature too high, $> 55^{\circ}\text{C}$.

For points 1. - 3 above, shut down trip computer with
battery connected by removing fuse F4.

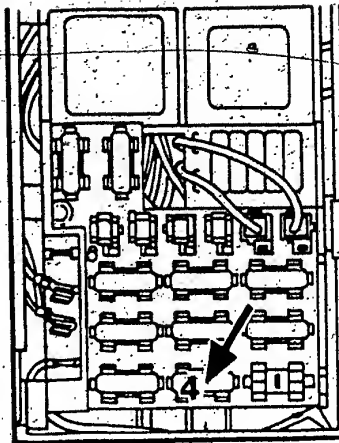
After waiting for 2 minutes, re-insert fuse.

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263/35

If point 4 is the cause of complaint (high temperature), full operational capability is resumed when the temperature drops below 65°C.

In none of the above cases is there any permanent damage to the trip computer.

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	Register tab 7	Vehicles
OPEL ENGINES WITH CATALYST	File Identity	VDT-I-OPE 028 En
BOSCH SUPER SPARK PLUGS		06.1986

Opel has approved Bosch spark plugs for engines with catalytic converter. Bosch spark plugs are also used as initial installed equipment.

1.8 l engine WR 6 DC 0 242 240 511
3.0 l engine WR 7 BC 0 242 235 522

Independent of this, Bosch spark plugs can be installed in other engines - including Opel engines - in the Bosch spark-plug list, regardless of whether they have been specifically approved by the engine manufacturer or not.

In such cases, the general statement of many engine manufacturers applies, to the effect that the installation of not-officially-approved spark plugs is permissible if the plugs are identical in their technical characteristics with the approved plugs.

BOSCH fully guarantees this in accordance with the familiar warranty statement.

Responsible:

ROBERT BOSCH GMBH
Division KH
Technical After-Sales Service (KH/VKD 2)

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SERVICE INFORMATION	>==<
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Kundendienst KH

Service Information

Nur zum internen Gebrauch. Weitergabe an Dritte nicht gestattet.

Peugeot 504 D (XD 4/90 engine)

VDT-I-PEU 001 B

June 1974

Alignment of the distributor-type fuel injection pump and the engine when fitting the pump.

Timing data

From 10.70 until 9.72 the Peugeot 504 D (XD 4/90 engine) was equipped with injection pump 0 460 084 026 — EP/VM 4/80 A 2200 AR 12. On this pump the "port closing" is set at a plunger stroke of 0.55 ± 0.02 mm. after BDC, and an engine setting with the piston of the first cylinder (when looking at the engine from the radiator) at 13.5° and/or 1.46 ± 0.02 mm before TDC. When the pump is correctly timed, the "missing tooth" is at the top left of the drive gear (pump), and the "double-tooth" on the drive pinion (engine) is aligned with delivery valve holder B.

From 10.72 the Peugeot 504 D (XD 4/90 engine) is equipped with the distributor-type fuel pump 0 460 394 014 — EP/VA 4/90 H 2250 CR 173 or 0 460 394 019 — EP/VA 4/90 H 2250 CR 173-1, or, for export to the U.S.A., 0 460 394 021 — EP/VA 4/90 H 2250 CR 173-2.

On the injection pumps CR 173, CR 173-1, and CR 173-2, the "port closing" is set at a plunger stroke of 0.65 ± 0.02 mm. after BDC, and an engine setting with the piston of the first cylinder at 8° and/or 0.51 ± 0.02 mm before TDC.

Timing as above.

Check:

The pump plunger distributing groove must point towards the delivery valve holder connected to the fuel injection tubing leading to the first cylinder.

In case of inquiry, please contact your authorized representative.

Robert Bosch GmbH
Geschäftsbereich K-Ausrüstung
Handel
Kundendienst-Technik

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Geschäftsbereich KH, Kundendienst.
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Peugeot Model 504 Injection

with Mechanical Fuel Injection

VDT-I-PEU 002 En

9.1978

Supersedes VDT-I-PEU 002 B 7.1978

VDT-I-002 B Suppl. 2.1.1977

Since January 1971, Peugeot has equipped Engine XN 2, in the Model 504 Injection, with mechanical fuel injection.

The engine has 4 cylinders in line and a swept volume of 2,0 liters.

Performance 78 kW (104 DIN HP)

Rated speed 5200 rev/min

Firing sequence 1-3-4-2

Idle speed 850 ... 900 rev/min

Ignition point 5° BTDC

(Pump plunger position 0,20 mm BTDC).

Starting with chassis number 1 766 129-8° BTDC

(Pump plunger position 0,54 mm BTDC).

1. Fuel-Injection Equipment

This fuel injection pump is also known under the designation "Kugelfischer" from the previous firm Schäfer Einspritztechnik.

Injection pump	PLOO 4-104.04 A 1-A4	8 492 014 141
As from March 1975	PLOO 4-104.04 A5, A6	8 492 014 142

The fuel-injection pump and the altitude governor are considered to be a single unit and must be supplied and/or returned together.

Direction of rotation clockwise when viewed toward the drive.

Injection valves	DLO 20 D	8 492 801-227
Nozzle unit (supporting device)		8 492 809 031
Opening pressure	30 + 8 bar gauge pressure	
Electric fuel pump	OF/RDG 2/60 CP 20/12/9.	0 580 363 001
starting in July 1975	OF/RDG 2/60 CP 20/12/39.	0 580 363 002

2. Explanation of Pump Type Coding

P	L	O	O	4	-	104	01	A	1
Pump.	Light oil.	Without helix, with stroke regulation.	Size.	Number of cylinders.		Engine manufacturer identification number.	Engine type identification number.	Modification letter. Pumps with different letters are not interchangeable.	Internal modification number. Pumps with different numbers are interchangeable.

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3. Description of Injection System

This fuel injection pump is fitted with a pneumatic governor, which responds to the operating parameters of intake manifold vacuum and ambient air pressure, and which controls the required amount of fuel injected into the engine by means of a control curve. The oil system in the engine lubricates and seals the pump plungers against fuel leakage. In order to lubricate the pump drive, the pump housing is filled with oil.

The injection system includes the following parts:

- Injection pump with pneumatic governor
- altitude governor
- cold-start device
- warm-up device
- injection valves
- electric fuel pump

The injection pump contains the following assemblies:

Pump housing with camshaft, sliding tappets and plunger return springs, swivelling control lever mounted on the eccentric shaft, and the cam lever.

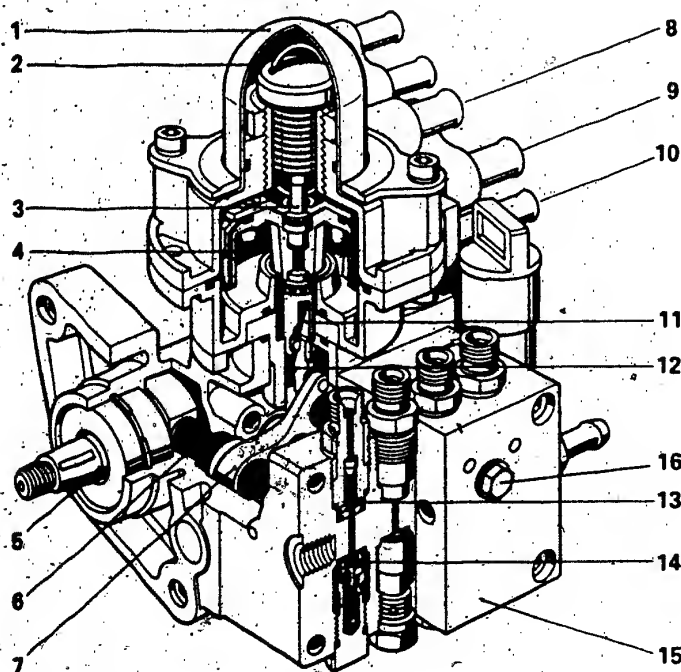
Pneumatic governor with control plunger, helical extension spring, ball joint.

Pump body with plungers and plunger bushings, suction valves, delivery valve assemblies.

Injection Pump with Pneumatic Governor

The course of the sliding tappet stroke is determined by the contour of the cam. The downward movement of the plunger coincides with the downward movement of the sliding tappet until the plunger reaches its lower rest position. While the sliding tappet follows the cam track farther, the plunger remains stationary, positioned against the swivelling control lever. When the sliding tappet moves upward again, it picks up the plunger in the latter's rest position and carries the plunger upward until the plunger again reaches its upper dead center point.

The quantity of fuel delivered is controlled by varying the plunger stroke. Actually, only the lower rest position is changed here. Port closing (start of fuel delivery) is thus variable, while port opening (end of delivery) is fixed. In other words, the suction stroke is limited, and during each delivery stroke the amount of fuel drawn in during the previous suction stroke is pumped to the injection valves. The lower rest position of the plunger is determined by the swivelling control lever, the position of which can be varied in the direction of, i.e., parallel to, the plunger movement. The swivelling control lever is designed as a single-arm lever and is mounted on the eccentric shaft. Its free end is supported on the cam lever through the sensor pin. The lower rest position of the plunger can be varied from two sides independently of each other.



- 1 = Pneumatic governor
- 2 = Upper chamber
- 3 = Control plunger with flexible diaphragm
- 4 = Lower chamber
- 5 = Camshaft
- 6 = Sliding tappet
- 7 = Swivelling control lever
- 8 = Intake manifold vacuum from altitude governor
- 9 = Intake manifold vacuum to upper chamber
- 10 = Intake manifold vacuum to lower chamber
- 11 = Ball joint
- 12 = Cam lever
- 13 = Delivery-valve assembly
- 14 = Suction valve
- 15 = Pump body
- 16 = Oil-level checking screw

In order to control the quantity of fuel injected, the ball joint — which is mounted in the ball guide in such a way that it can be shifted — senses the contour of the cam lever. The ball joint is connected rigidly with the control plunger. As the regulating parameter, the intake manifold vacuum is a measure for the weight of the air fed to the engine during each working cycle, and a certain volume of fuel must be associated with this air for combustion. A diaphragm hermetically separates the chambers at the lower and upper sides of the control plunger. The lower chamber is connected directly to the air intake line behind the throttle valve, so the vacuum just behind the throttle valve also prevails in this chamber. A counterpressure, corrected by the altitude governor and of a magnitude between atmospheric pressure and the pressure in the intake manifold, acts on the upper side of the plunger. The characteristic curve for the particular engine model with which the injection pump is used is programmed on the cam lever.

Altitude Governor

By means of the altitude governor, the amount of fuel injected into the engine is also varied as a function of the atmospheric pressure, i.e., as functions of the geographical elevation and the current barometric pressure at the location where the vehicle is operated. Essentially, the altitude governor consists of a barometric cell which operates a slider to control the open cross-section of the slot in a diaphragm as a function of the air pressure, and which is then connected with the chamber on the upper side of the plunger in the pneumatic governor through a hose line. On the other side, the altitude governor is connected with the intake manifold through a fixed hole diaphragm and a hose. Therefore, depending on the open cross-section of the slot in the diaphragm and on the intake manifold vacuum, the flow of air is varied, intensifying the change in the pressure acting on the upper side of the governor plunger as a result of barometric pressure.

Cold-Start Device

When the starting motor is activated, an electromagnetically controlled valve is opened and the larger amount of fuel required for a cold start is sprayed into the intake system.

Warm-up Device

The additional quantity of fuel and air required during the warm-up period is controlled as a function of the cooling water temperature by means of an expansion element. As the cooling water temperature increases after a cold start, this expansion element continuously reduces the amount of fuel sprayed into the engine by turning the eccentric shaft, raising the swivelling control lever. At the same time, the air-regulating cone is shifted accordingly in order to reduce the auxiliary air required for idling.

Injection Valve

The injection valve is a conical valve which is drawn back to its seat by means of a suspended, pendulating double helical extension spring.

Electric Fuel Pump

Rohr-Call fuel pump 0580363.001 or 002 is used in this system.

4. Removal of Injection Pump

This section and the next section present only deviations from, or remarks relating to, working steps generally assumed to be required.

Before the injection pump can be unbolted from the timing case, the crankshaft pulley, the timing case cover, and the pump drive wheel with the toothed belt must be removed.

When the toothed belt has been removed, it must never be coiled up so tightly that an arc with a diameter of less than 20 mm results.

5. Installation of Injection Pump

Coat the sealing surface of the fastening flange with a sealer.

Tighten the bolts fastening the pump at the timing case and at the rear support between the pump housing and the oil filter with a torque of 20 N · m (2 kgf · m).

Check the oil level in the injection pump. If necessary, add ESSOLUBE 10 W. In order to do this, remove the oil level checking screw. The oil must flow out without bubbles. Then replace the screw and tighten it.

Connect fuel and air lines — see drawing below.

In order to make the basic adjustment of the pump, mount the fastening nut for the crankshaft pulley temporarily in place. Set the rotor in the ignition distributor so that it points forward (between ignition cables No. 1 and No. 3). Set the pump camshaft so that the Woodruff key points exactly to the center of the connection screw for fuel inlet at the pump.

Replace the toothed belt around the pump and camshaft drive wheels. The markings must match (the notch on the camshaft wheel and the projection on the toothed belt, as well as the notch on the pump wheel between the two projections on the toothed belt). Push the drive wheel onto the pump shaft. Turn the crankshaft one revolution back and check the adjustment by turning in the normal direction. Tighten the hexagonal nut holding the pump drive wheel with a torque of 35 N · m (3.5 kgf · m), and lock it.

Replace the timing case cover. Mount the crankshaft pulley on the shaft and tighten the hexagonal nut with a torque of 170 N · m (17 N · m) and lock it.

6. Service Information

Electric Fuel Pump

In order to check the delivery pressure of the electric fuel pump, connect pressure gauge 8 492 920 510 or KDEP 1034 (suitably modified) at the inlet to the injection pump. The delivery pressure should be between 1 and 2.5 bar. A pressure that is only slightly higher than this range has no effect on the operation of the injection pump. If the pressure is lower than 1 bar, however, check the fuel lines, the voltage at the fuel pump, and the filters.

Fuel pump 0580363001 was installed in this model up till June 1975, but starting in July 1975 pump design 002 has been installed in it, a pump which differs externally from the earlier type in that the positions of the fuel connections have been changed.

When the newer type of pump is installed in place of the older design, 2 connection hoses must be changed, and a protection stop must be mounted on the tank at the connection of the two parts.

Please order the parts required for this modification from a Peugeot representative.

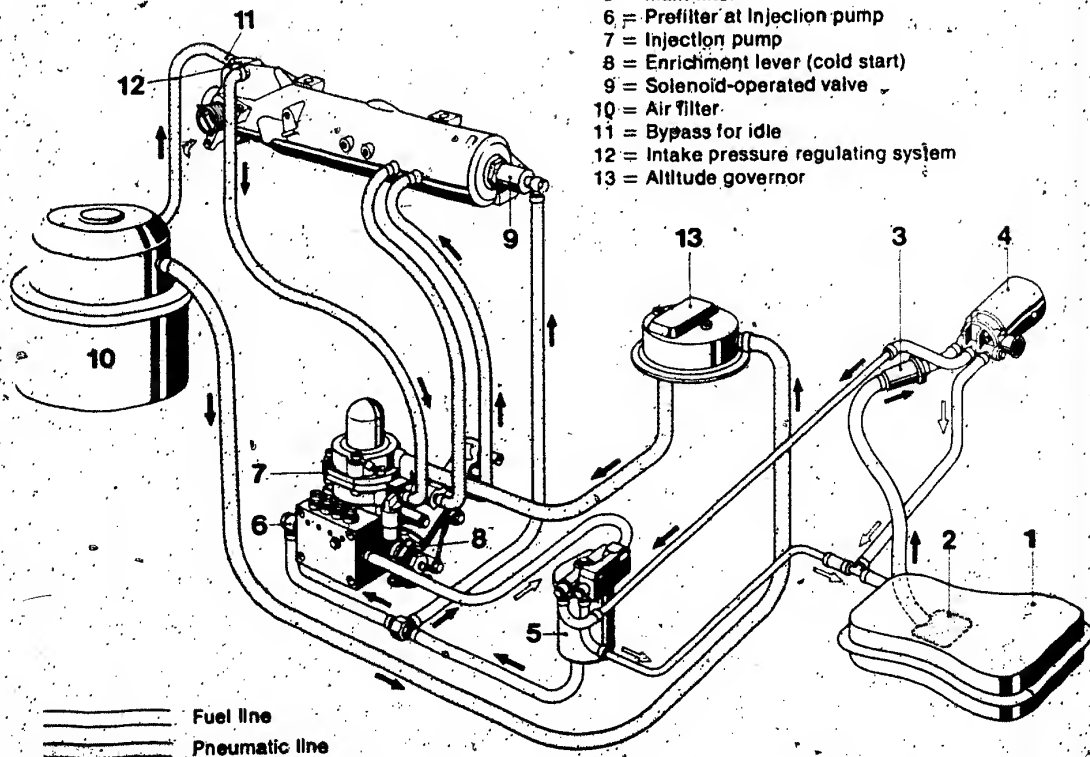
Designation	Peugeot Part No.
Connection hose (3-way connection)	1 564.84
Connection hose (pump prefilter)	1 564.85
Stop (L = 50 cm)	8 451.19

Injection Valves

The opening pressure of the injection valves is $30 + 8$ bar. The minimum permissible opening pressure is 15 bar. At a pressure of 15 bar, no drops of fuel may form for 5 seconds. Before every test, the injection valve should be thoroughly washed out by operating the nozzle tester rapidly. The opening pressure cannot be adjusted.

Injection Pump

In order to ensure that exhaust gas regulations contained in the "Europe Test" can be met in the future, the cam lever in the A5 design of the injection pump was designed so that fuel injection is not cut off during overrun. In addition, the amount of fuel injected into the engine during idle was reduced. The cam lever has the designation A-006, 8 492 530 494. Contrary to the information given in the explanation of the pump type coding, the A5 and A6 designs cannot be replaced with designs A1 through A4. We recommend that as a basic rule you convert to the A5 or A6 design when a pump of design A1 through A4 must be repaired. In order to do this, the following changes must be made on the engine:



- 1 = Fuel tank
- 2 = Fuel intake strainer in fuel tank
- 3 = Prefilter at fuel supply pump
- 4 = Electric fuel supply pump
- 5 = Main filter
- 6 = Prefilter at Injection pump
- 7 = Injection pump
- 8 = Enrichment lever (cold start)
- 9 = Solenoid-operated valve
- 10 = Air filter
- 11 = Bypass for idle
- 12 = Intake pressure regulating system
- 13 = Altitude governor

- The diaphragm with a diameter of 2.3 mm (black) installed in the air distributor must be replaced by the diaphragm with a diameter of 2.2 mm (brass color), Part No. 8 491 102 220.
- The light gap in the throttle valve should be adjusted as described in the section "Adjusting the Pump to the Engine" below. After this adjustment has been made, the light gap should be enlarged by turning the idle stop screw $\frac{1}{8}$ of a turn inward. Set the idle speed and the CO concentration in the exhaust gases to the correct values.

If the engine operates unevenly when idling, please proceed as follows: with the engine operating, detach the pressure lines at the injection valves one after the other in order to find the cylinder responsible for the uneven operation. Interchange the injection valve at the cylinder found responsible for the problem with the injection valve next to it. If the problem is now found to be at the other cylinder, replace the injection valve. If the problem remains at the original cylinder, drive the air out of the delivery-valve assembly. For this purpose, remove the fuel-injection tubing. Release the delivery-valve assembly nut at the cylinder in question using socket 8 492 922 100. Switch on the ignition and let some fuel flow out at the pressure valve. Tighten the delivery-valve assembly nut with a torque of 50 N·m (5 kgf·m). Check for leaks.

In order to test the delivery-valve assemblies for leaks, first switch on the ignition. With the fuel-injection tubing removed, the depressions in the pressure connections must not fill up in less than 30 seconds. If they fill up more quickly, replace the delivery-valve assemblies affected.

Change to Injection Pump ... A 6

Necessary to meet the regulations of the Economic Commission for Europe which state that as of 1st October 1976, in vehicles with externally supplied ignition engines registered for the first time, the idle-speed adjustment device is to be sealed in such a way that it cannot be adjusted without destroying the seal. The injection pump PL 004—104.04 A 5 in use up to the present has been modified to design A 6, retaining the previous Part No. 8 492 014 142. The most important feature of the modification is the securing cap (Item 70 in the service-parts list) to safeguard against unauthorised adjustment of the enrichment lever. In this way non-experts are to be prevented from resetting the idle-speed adjustment and thereby unlawfully affecting the exhaust value. Consequently, securing caps are only to be used in the workshop and not sold to customers. The securing cap (in colour white) 8 491 519 203 is to be used for after-sales service.

Adjusting the Pump to the Engine

Additional air fed to the engine (infiltrated air) causes operating malfunctions during idle. For this reason, before every adjustment check the following: no leaks at the connections to the air distributor, compression pressure at all cylinders, ignition adjustment, air filter. The bypass screw is used only to adjust the idle speed. In order to adjust the idle speed, operate the engine

until it is at operating temperature (Visco fan switches on). While warming the engine up, check the warm-up sensor and adjust it if necessary. At a water temperature of 78 ... 80° C (measured, for example, with thermometer 8 492 920 522), there should be a space of 5.4 mm between the disk nut on the regulating cone and the warm-up lever. Make a spacer for use here if necessary (try open-end wrenches as a spacer). Set the idle speed at the bypass screw to 850 ... 900 min⁻¹. Connect the carbon-monoxide analyzer. Set the CO value at the full-load stop screw. As a standard rule, set this value lower than the maximum CO value specified legally. Correct the idle speed at the bypass screw if necessary. Correct both adjustments alternately until the proper values are reached. If this idle speed adjustment is not successful, the basic adjustment of the throttle valve for idling must be checked and corrected if necessary. In order to do this, remove the screw plug at the front of the air collector over the throttle valve. Using a test lamp and a mirror, check the light gap at the throttle valve opening. Only a very narrow light gap must be visible. Adjust this gap at the throttle valve stop if necessary.

7. Repairs

These instructions are only intended to point out special items. A complete description is given in the repair instructions.

Two diaphragms are contained in the pneumatic governor. During disassembly, the ball joint must be held stationary in the ball guide by a home-made tool so that the small diaphragm is not destroyed. This tool is also used for the same purpose during re-assembly so that the slot in the ball joint can be aligned accurately.

The spherical inserts in the swivelling control lever are precisely matched to each other with an accuracy of 0.005 mm for adjustment of the effective stroke. When the pump is dismantled the spherical inserts, tappets, and plungers with the plunger bushings must never be changed. Accurate measurement is only possible with dial indicator gauge 8 492 921 002, adjusting piece 8 492 921 501, and guide plate 8 492 921 005.

As a basic rule, the injection pump should not be completely disassembled without sufficient knowledge or without the repair instructions and special tools required. At the most, only the pump body can be removed in order to check the inside of the pump visually and to clean it if necessary.

8. Testing

In order to test the injection pump a normal Bosch injection-pump test bench can be used. As a result of the accurate measurement of the spherical inserts, the effective stroke as a basic adjustment has already been set. On the test bench the pneumatic governor is adjusted and matched to the pump. These adjustments and the operation of the injection pump can be checked by quantity measurements.

Since the governor reacts to very small variations in air pressure, it is absolutely imperative that the actual air pressure prevailing be used as the basis for the testing. This air pressure can be measured only with a mercury barometer or you can ask the local weather bureau responsible for your area for this information. Commercial barometers are not suitable for this purpose.

The usual calibrating oil can be used for testing the pump. Be sure, however, that only absolutely clean oil is used.

Using graph nos. 1 to 4 the corresponding values of the U-tube reading should be determined.

U-tube readings and graphs are referred to mm Hg.

Example: Graph No. 3, Part load 2

Air pressure (Barometric pressure) 720 mm Hg
Adjustment value at U-tube 15 mm Hg

Because the U-tube is filled with mercury, and thereby appeared dangerous and unsuited for use in the workshop, the pressure gauge 1 687 232 038 has been developed for adjustment and testing.

With graph nos 5 to 8 the setting values for the pressure gauge are to be determined in mbar.

Example: Graph No. 7, Part load 2

Air pressure (Barometric pressure) 990 mbar
Adjustment value at pressure gauge 70 mbar

9. Test Values (provisional)

Pump type PL 004-104.04 A 5, ... A 6
Camshaft 8 492 314 410
Cam lobe 2.2 mm
Direction of rotation: to the right (clockwise) when viewed toward the drive

A. Setting values for the pneumatic governor

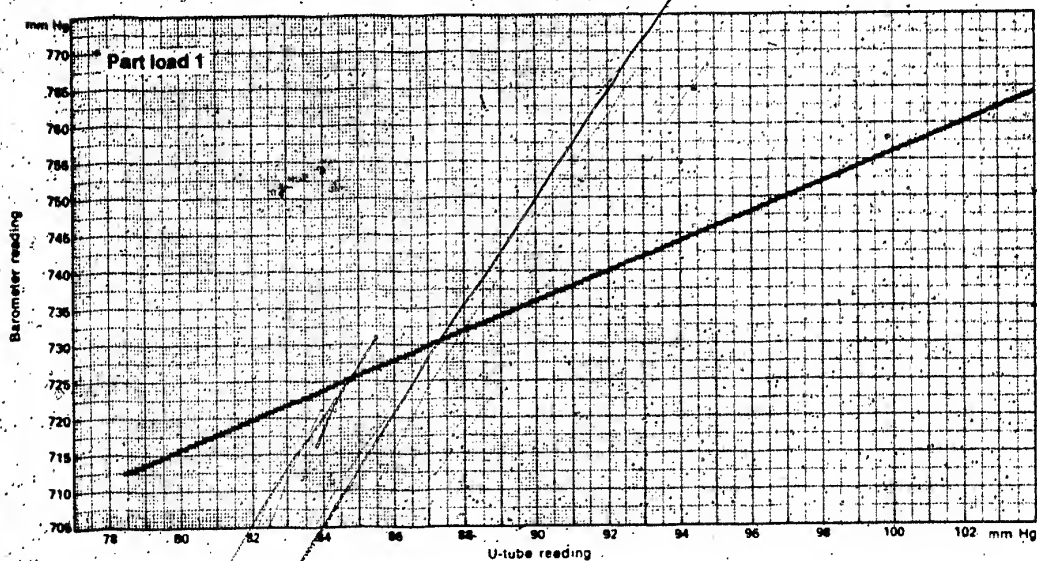
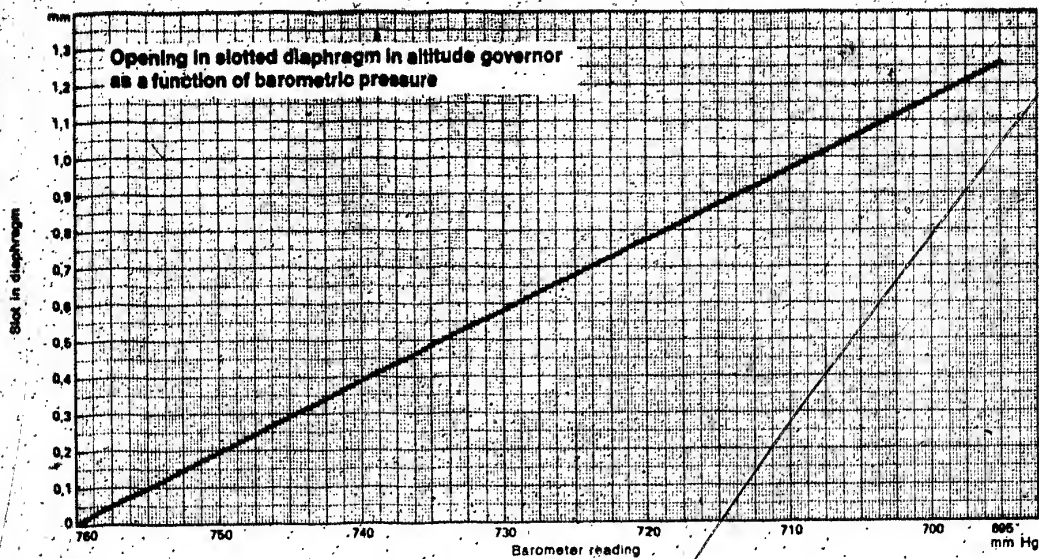
Supply pressure 1.4 to 1.6 bar.

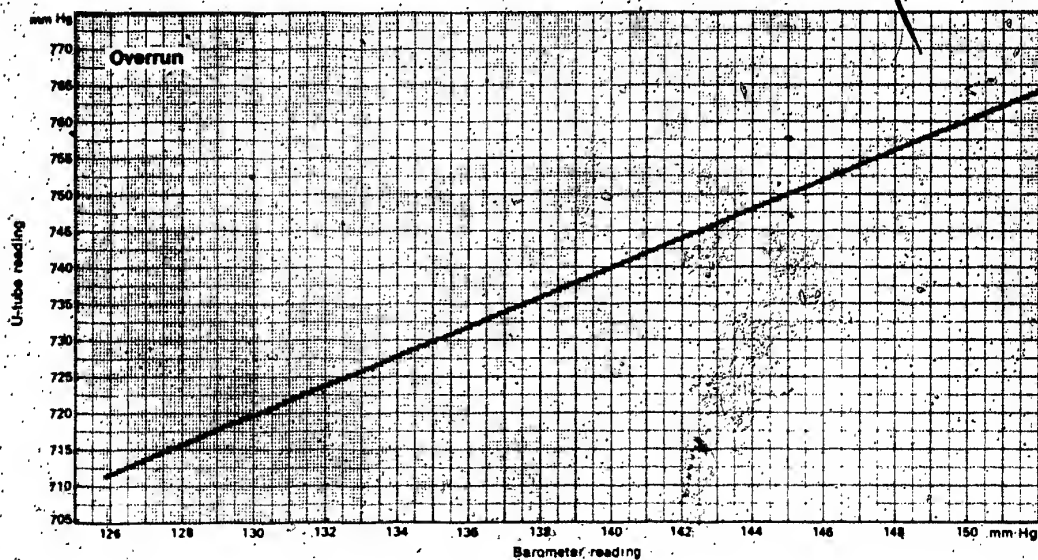
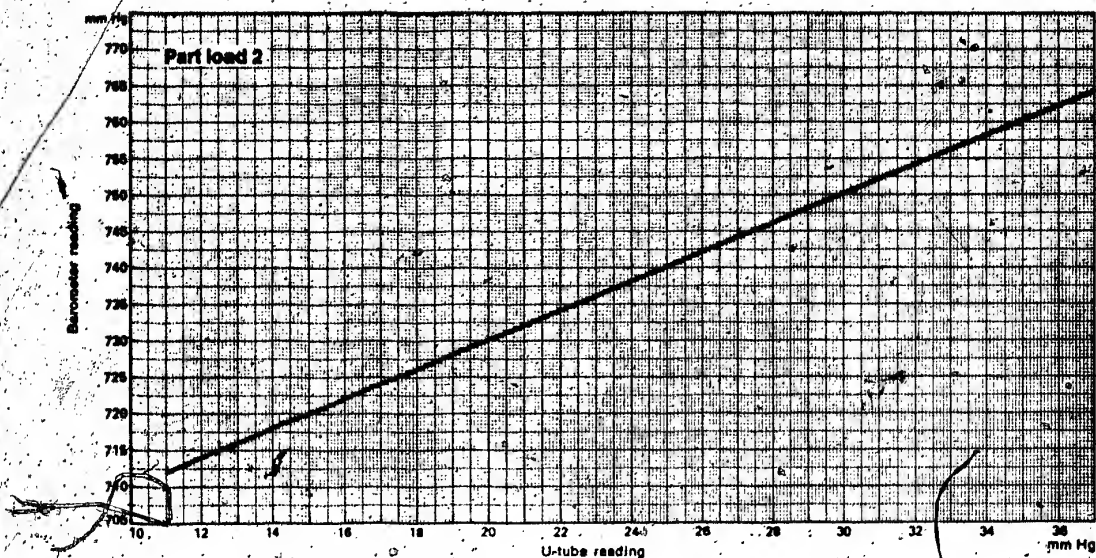
The air pressure prevailing at the time of the adjustment should be taken as the basis for calculations. As mentioned above, the governor reacts to very small variations in the air pressure. For this reason, the air pressure must be measured with a mercury barometer or this information should be obtained from the local weather bureau.

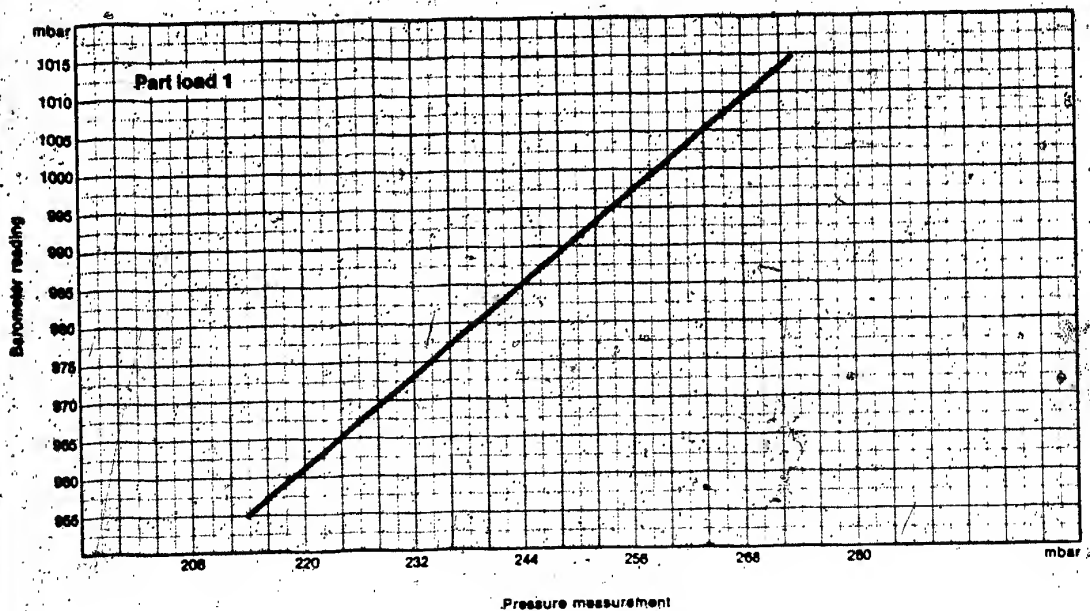
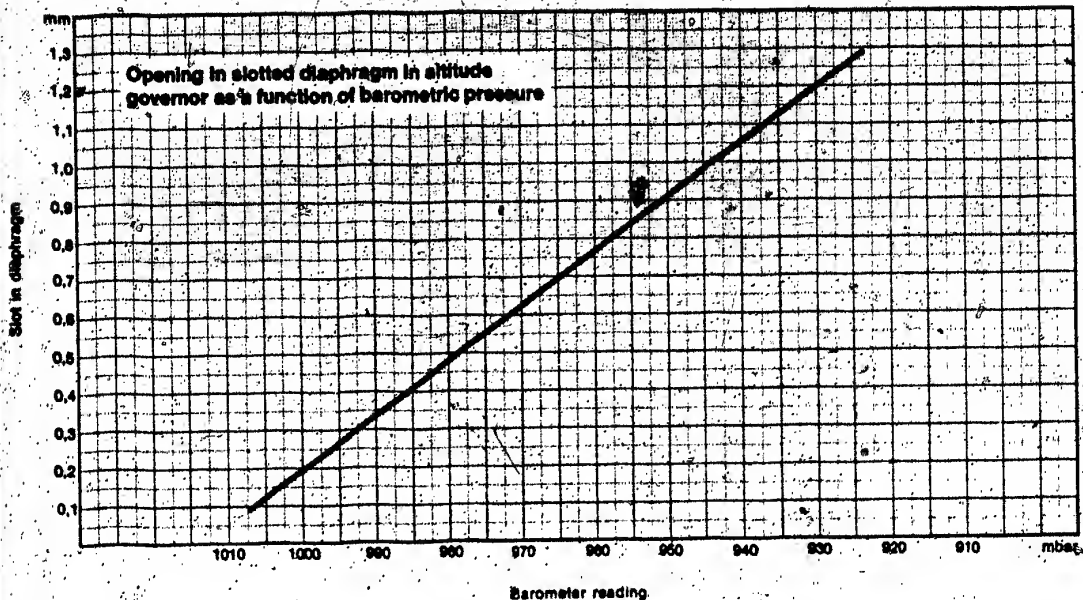
Measurement Points	Graph No.	Stroke mm	Adjustment Process
Full load	—	1.65 / 1.60	Cam lever in lowest position. Stroke adjustment at the enrichment screw.
Part load 2	3 or 7	1.16	Turn threaded bushing and spring together.
Overrun	4 or 8	0.22–0.23	Hold spring and turn threaded bushing.

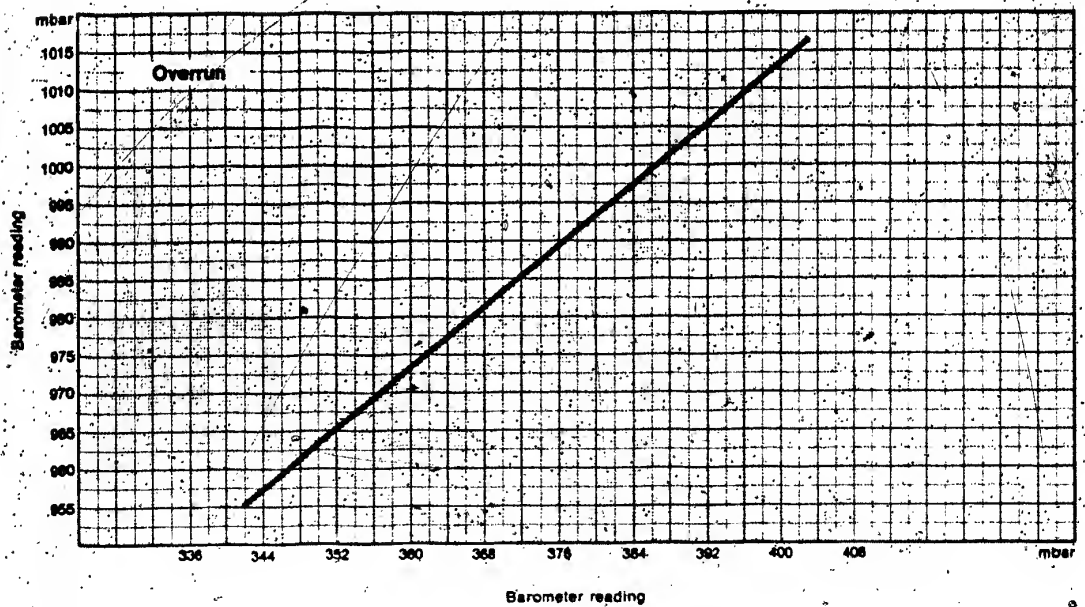
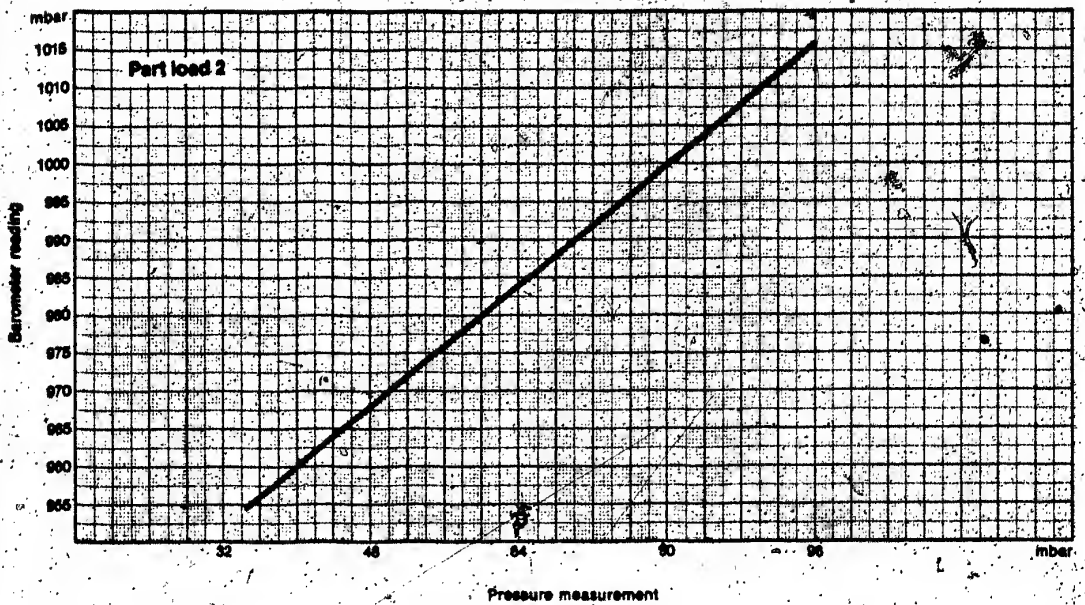
B. Adjustment values for injection pump with governor

Measurement Points	Graph No.	Rot. speed min ⁻¹	Strokes	Fuel Delivered cm ³	Difference (Spread)
Part load 1	2 or 6	1400	1000	Average value 15.0 ± 0.02 cm ³ for all cylinders. Correct at enrichment lever.	
Part load 2	3 or 7	1400	500	18.4 ... 19.6	0.6
Full load	—	1400	300	15.0 ... 16.0	0.5
Overrun	4 or 8	1400	1000	5.0 ... 7.6	1.0









10. Tools

Various special tools are required to repair and test this injection pump. Basically, these tools are ordered along the part.

11. Technical Documents

The following technical documents have been published:

Repair and Testing Instructions VDT-W-408/500 En

Test Specification Sheet, contained in this Service Information in provisional form.

Service Parts List, see microfiche.

Catalog Sheet for KD Tools; KDEP 17

Catalog Sheet for Special Accessory for EP Test benches WA-VJF 2/7701.

12. Service Parts

The service part order numbers for this injection pump begin with 8 4 . . and should be ordered in the same way as other Bosch service parts.

13. Warranty

Please handle the warranty for this pump in the usual way as detailed in the Warranty Handbook.

Production date

The production date is given on the pump body by one letter and the number of the month from 1 to 12.

S = 1970, T = 1971, Y = 1972, W = 1973, X = 1974,
Y = 1975, Z = 1976

1 to 12 January to December.

As of 1977 the usual Bosch production dates will be used.

Please encode these production dates according to the Bosch Warranty Handbook.

Examples: S 5 = 1970 May = 025

or Y 9 = 1975 September = 529.

Defect numbers are included in the Warranty Handbook.

Peugeot models 204 D, 304 D

with VE distributor-type fuel-injection pump

VDT-I-PEU 003 B

Suppl. 1

10.1977

Since June 1977, Peugeot have been fitting distributor-type injection pump 0 460 484 002 — VE 4/8 F 2500 L 17 in their 204 D and 304 D models instead of the pump 0 460 484 001 — VE 4/8 F 2500 L 13 installed previously. The new pump is provided with an electromagnetic shutoff device.

The pump model .. L 17 is interchangeable with model .. L 13, provided an electric terminal is installed for the electro-magnetic shutoff device.

The details given in Service Information VDT-I-PEU 003 B (May 1976) are also applicable for pump model .. L 17.

Production of the VA distributor-type fuel-injection pump 0 460 384 007 — EP/VA 4/8 OH 2500 CL 174 was ceased in July 1977.

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PEUGEOT TYPE 305 D

VDT-I-PEU 010 En

with VE..F..-distributor-type fuel-injection pump

7.1980
Replaces Ed. 10.1978

Since June 1980 the Peugeot 305 D has been fitted with a VE..F..-distributor-type fuel-injection pump with part-load governor, mechanical and electrical shutoff-device and a stop for increased idle speed.

<u>Engine data:</u>	Engine	XID 4
	Engine swept volume	1548 cm ³
	Output	37 kW (50 HP)
	Rated speed	5000 min ⁻¹
	Ignition sequence	1-3-4-2

<u>Fuel-injection equipment:</u>	10/78 - 6.80	from 6.80
Distributor-type fuel-injection pump	VE 4/8 F 25== L 29 0 460 484 003	VE 4/8 F 2500 L 60 0 460 484 005
Single-stage box-type filter	9 459 990 558	9 459 990 558
Fuel-filter box	1 457 431 028	1 457 431 028
Nozzle-and-holder assembly	0 432 217 060	0 432 217 069
Nozzle-holder assembly	KCA 17 S 33/4 0 430 211 046	KCA 17 S 38/4 0 430 211 049
Nozzle	ON 0 SD 1510 0 434 250 011	ON 0 SD 1510 0 434 250 011
Opening pressure	130 + 5 bar	130 + 5 bar

For complete Bosch equipment see microfiche.

Timing the pump to the engine

The pump is timed according to the dial indicator method.

Timing point;

pump: at a plunger lift of 0.5 mm after BDC
Engine: 8° before TDC

Work units:

Work units for repairing and testing have not yet been issued.

Provisional work units:

Complete dismantling and testing max. 35 AW
Testing, adjusting and eliminating a minor fault max. 16 AW

After-sales service instructions:

Please see that speedy after sales-service work is carried out on this vehicle in your workshop.

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PEUGEOT 604 D TURBO

with VE .. F ..
distributor-type fuel-injection pump

VDT-1-PEU 014 En

10.1980

Supersedes Ed. 6.1979

The VE..F.. distributor-type fuel-injection pump in the Peugeot 604 D with the XD 2 S engine is fitted with the following equipment: solenoid-operated shutoff device together with an additional mechanical shutoff device; manifold-pressure compensator (LDA), quiet-idle device (in the hydraulic head), load-dependent start of pump delivery (LAER) and delivery-valve holder with integrated reverse-flow throttle.

Engine data

Water-cooled, 4-cylinder, 4-stroke diesel engine with whirl chamber (Ricardo Comet 5). Power output 59 kW (80 DIN HP) at a rated engine speed of 4150 min⁻¹. Engine swept volume 2.3 l, firing sequence 1-3-4-2, compression 21:1.

Fuel-injection equipment

Distributor pump
(for vehicles with manual-shift transmission)

0 460 404 003 - VE 4/10 F 2075 R 40

(approx. qty. 6,000 delivered)

As from September 1979

0 460 404 008 - VE 4/10 F 2075 R 40 - 2

As from June 1980

0 460 404 011 - VE 4/10 F 2075 R 62

Distributor pump
(for vehicles with automatic transmission)

0 460 404 004 - VE 4/10 F 2075 R 40 - 1

(approx. qty. 2,000 delivered)

As from September 1979

0 460 404 009 - VE 4/10 F 2075 R 40 - 3

As from September 1980

0 460 404 018 - VE 4/10 F 2125 R 62/2

The modification refers to the functioning of the governor. Pumps .. 003 and .. 004 have idle-speed spring combinations. Pumps .. 008 and .. 009 have idle intermediate-spring combinations with which a strong puff of exhaust smoke is prevented when the engine is suddenly accelerated from idle when the vehicle is standing still. This is in compliance with French Technical Control Board Regulations.

Pumps .. 003 and .. 008 are fully interchangeable with one another, as are pumps .. 004 and .. 009.

Pump .. 011 and pump .. 018 are not interchangeable with their predecessor models.

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Fuel filter

The Purifier CP 30 ADK is fitted.
The appropriate filter element has the Bosch Part Number 1 457 431 028.

<u>Nozzle-holder assembly</u>	old (as from 5/80)	new (as from 6/80)
Nozzle-and-holder assembly comprising:	0 432 217 060	0 432 217 069
Nozzle-holder assembly	0 430 211 046-KCA17S33/4	0 430 211 049-KCA17S38/4
Nozzle	0 434 250 011-DNOSD1510	0 434 250 011-DNOSD1510

Opening pressure 130+5 bar overpressure

See the Microfiche for the complete Bosch equipment.

Notes for after-sales service

The normal after-sales service is to be carried out for this VE..F.. distributor pump. The appropriate technical documentation has already been published.

A supplement is to follow for the Repair Instructions due to the quiet-idle device incorporated in the hydraulic head.

Test specifications can be obtained from KH/VSK 1, if required, until they are issued on microfiche.

Tools for repair and testing

The conventional tools listed in the catalog sheets KD-EP 11 are required for the repair of this VE..F.. distributor pump.

Tools and equipment required for testing

Timing-device-travel measuring device	1 688 130 139
Setting throttle	1 688 130 132
For checking the charge-air pressure:	
Pressure-reducing valve for compressed air, with pressure gauge 0...4 bar	Commercially available
Pressure gauge 0...1.6 bar (Quality grade 1.0)	Commercially available
Dial indicator (scale division 0.01 mm)	1 687 233 012
Measuring-stem thread M 3	

Exchange pump

The distributor pumps 0 460 404 008, ... 009, ... 011 and ... 013 have been included in the Exchange Program with the Index No. 090.

Repair times

The work-unit figures for repairing and testing the VE..F.. distributor pump fitted with the LDA have not yet been issued. Maximum values when the pump is dismantled completely: 45 AW.

Checking and adjusting together with the repair of a minor fault (for instance, a leak): 20 AW.

These AW are only provisional.

Timing the pump to the engine

The distributor pump is timed according to the dial-indicator method.

Setting points

Pump: At a plunger stroke of 0.30 mm after TDC.

Engine: 10° BTDC = 0.80 mm BTDC.

Please get into touch with the Peugeot representative in your area and ascertain the sales figures for these vehicles. Please make every effort to ensure that your workshop carries out impeccable and speed repair work on the fuel-injection system of these vehicles.

PEUGEOT 505 TI/STI

604 TI

with K-Jetronic

VDT-I-PEU 015 En

6.1981

Replaces Ed. 7.1979

Failure of the electric fuel-pump

In the above mentioned vehicles Peugeot have fitted a prefilter in front of the electric fuel pump.

This prefilter is available in two designs: with plastic casing or with metal casing.

In the prefilter with metal casing small plastic particles work themselves loose after a short time. This leads to blocking of the electric fuel-pump (roller cell pump).

Remedy

The prefilter with metal casing should be removed and replaced by the prefilter with plastic casing. The faulty electric fuel-pump should also be replaced.

The prefilter is not a Bosch product and must be obtained from Peugeot.

No guarantee or fair-deal claims can be accepted for electric fuel-pumps which have failed due to defective prefilters.

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PEUGEOT 604 D

VDT-I-PEU 021 En

with VE..F.. Distributor-type fuel-injection pump

5.1981

With increasing mileage, it can happen with these vehicles that complaints are received that the "Engine is putting out black smoke". The reason for this complaint is that the delivery quantity has increased by 2-3 cm³.

It is not necessary to remove the pump in order to alleviate this fault. It suffices to unscrew the full-load delivery screw by 0.2 mm. The screw is then to be locked again using locking paint.

Within the warranty period, this work is to be carried out for the customer free of charge and a warranty claim submitted to KH/VKD 3. Time for repair is max. 1 AW.

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PEUGEOT 505 D TURBO, 604 D TURBO
with VE..F.. distributor-type fuel-injection pump

VDT-I, PEU 922 En

5.1981

We have received some complaints about blue smoke in connection with the above-mentioned vehicles.

The cause of this complaint can be:

1. incorrect setting of the load-dependent start of pump delivery (LFB).
2. coking of the injection nozzles.

Remedy:

for point 1 : Set the start of pump delivery (LFB) at 1400 min^{-1} as in test sheet.

for point 2 : Exchange the fuel-injection nozzles.
Instead of nozzles 0 434 250 011, nozzles 0 434 250 109 should be used.

During the guarantee period the setting of the load-dependent start of pump delivery (Lfb) will be carried out without any charge for the customer. The pump should be forwarded to KH/VKD 3 with a warranty claim form. The customer will be charged for exchanging the nozzles.

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Peugeot 305 D, 504 D, 505 D, 604 D

VDT-I-PEU 023 En

as from year of manufacture 5.1981

7.1981

Auxiliary starting device with glow-duration unit 0 333 402 509

(or glow duration unit from Paris-Rhône Co., Seim Co., Service Parts of Peugeot Co.)

"R"-type sheathed-element glow plugs 0 250 ..

1. Necessary test equipment

Voltmeter

e.g. MOT 002.00 0 684 000 200

Ohmmeter

e.g. ETE 014.00 0 684 101 400

2. Trouble-shooting program

2.1 Aim of trouble-shooting program

While making use of all appropriate test equipment, this program is designed to help workshop employees quickly detect causes of trouble on engines with a pre-heating system.

2.2 Test sequence

The test steps given on the left-hand side of the trouble-shooting program contain test information and test specifications. If the test step has a negative outcome, consult the boxes on the right-hand side opposite for corresponding repair instructions.

3. Workshop information

3.1 We recommend that the "R"-type sheathed-element glow plugs be replaced every 45 000 km.

Note: If the fuel-injection pump is incorrectly adjusted, this may considerably reduce the service life of the sheathed-element glow plug.

3.2 In order to prevent the glow-duration unit from being irreparably damaged, the start repeater lamp must be fitted with a 12 V max. 2 W bulb.

3.3 For each repeat start the glow-plug and starter switch must, in order to obtain renewed pre-heating, first of all be turned to position St and then to position M. This makes it possible for the safety switch-off circuit fitted in the glow-duration unit to be re-activated.

3.4 If a voltage above 16 V is applied to term. 3 of the glow-duration unit (e.g. during fast charging), the glow-duration unit will not switch on. If the increased voltage occurs during pre-heating, the glow-duration unit switches off immediately. (Over-voltage protection of the "R"-type sheathed-element glow plug.)

3.5 In the event of a short circuit (short-circuit current from approx. 240 A) in the power circuit term. 1 and term. 5 of the glow-duration unit including "R"-type sheathed-element glow plug, the glow-duration unit switches off.

3.6 See pages 5 and 6 for the installation position of the glow-duration unit and start repeater lamp on the individual models.

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Trouble-shooting program

Before testing, make sure of the following:

Battery fully charged, compression O.K. (if necessary, check compression loss), fuel supply system and fuel-injection system O.K.

Starting motor turns and engine fails to start or starts only with great difficulty.

yes

Check voltage supply to "R"-type sheathed-element glow plugs. Connect voltmeter to "R"-type sheathed-element glow plug and to ground. Turn glow-plug and starter switch to position St and then to position M. A minimum voltage of 10 V must be indicated.

Note: The installation switches off automatically after at least 11 sec (temperature-dependent). If the measurement has to be repeated, then turn the glow-plug and starter switch to position St and then to position M.

Is the minimum voltage present?

yes

Check start repeater lamp. Turn glow-plug and starter switch to position St and then to position M. Start repeater lamp must light up.

Does start repeater lamp light up?

yes

Check pre-heating time. Turn glow-plug and starter switch to position St and then to position M. The pre-heating time (start repeater lamp lit up) must be

- 7...11 seconds at an ambient temperature of 0°C
- 6...10 seconds at an ambient temperature of +10°C
- 4...8 seconds at an ambient temperature of +20°C
- 3...6 seconds at an ambient temperature of +30°C
- 1...5 seconds at an ambient temperature of +40°C.

Pre-heating time (seconds) O.K.?

yes

Continued on page 4

1. If no voltage, then check cable from "R"-type sheathed-element glow plug to glow-duration unit term. 5 for open circuit.

Eliminate open circuit.

If no open circuit, then proceed on page 3 at program step "check voltage at glow-duration unit".

2. Voltage below 10 V, then check power circuit (positive terminal of battery) as well as term. 1 and 5 of glow-duration unit for voltage drop. Eliminate voltage drop.

1. Check cable from glow-plug and starter switch term. 15 to glow-duration unit term. 3 for open circuit.

Eliminate open circuit.

2. Check cable from glow-duration unit term. 6 including start repeater lamp as well as ground connections for open circuit.

Eliminate open circuit.

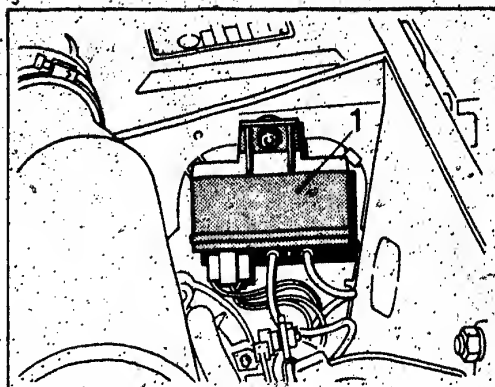
3. Check ground cable term. 2 from glow-duration unit for open circuit. Eliminate open circuit.

Replace glow-duration unit.

Glow²duration unit

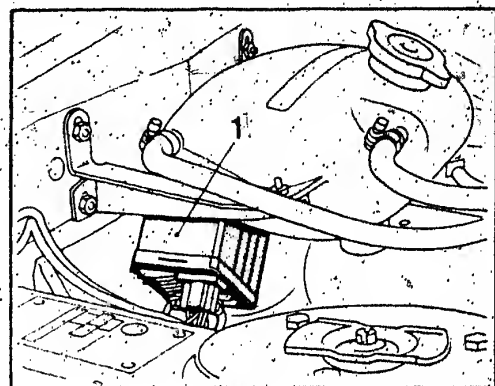
Typ 305 D

1



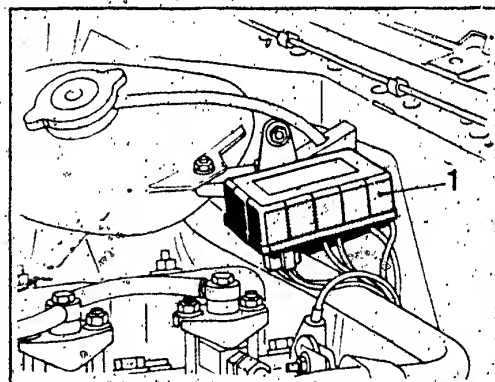
Typ 504 D

2



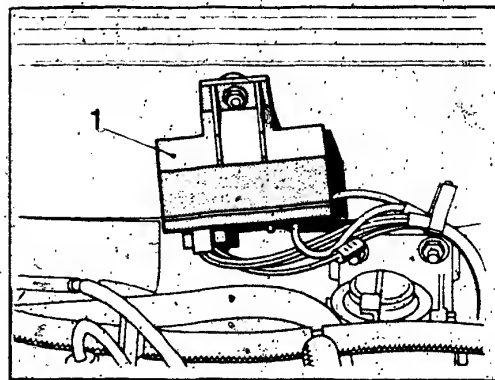
Typ 505 D

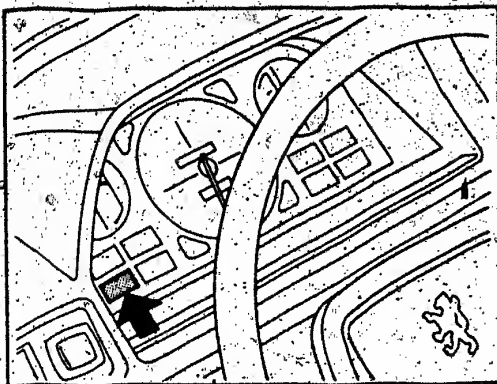
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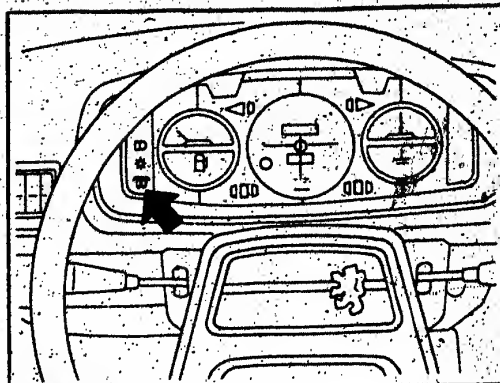
Typ 604 D turbo

4

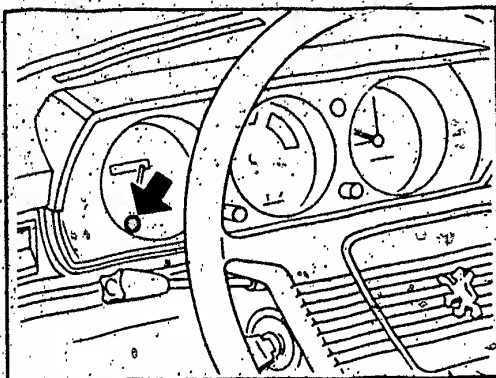


Start repeater lamp

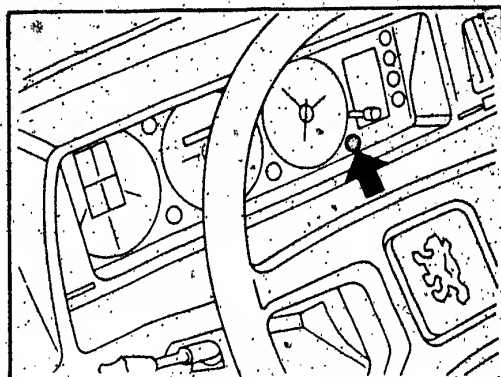
Typ 305 D



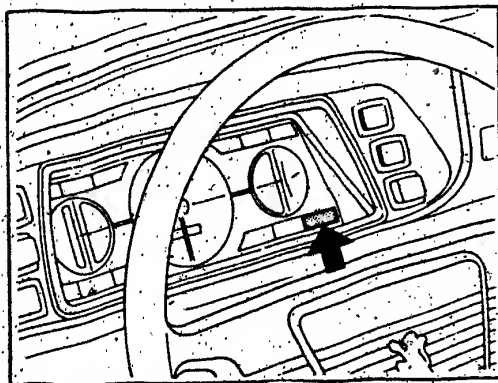
Typ 505 D



Typ 504 GLD, SRD



Typ 604 D turbo



Typ 504 LD, GRD

Continued from page 2

Check voltage at glow-duration unit term. 3.
 Connect voltmeter to glow-duration unit term. 3 and to ground.
 Turn glow plug and starter switch to position S and then to position M.
 The voltmeter must indicate battery voltage.
 Battery voltage present?

yes

Check ground cable term. 2 from glow-duration unit.
 Connect voltmeter to glow-duration unit term. 2 and to positive terminal of battery.
 Voltmeter must indicate battery voltage.
 Battery voltage present?

yes

Check voltage at glow-duration unit term. 1.
 Connect voltmeter to glow-duration unit term. 1 and to ground.
 The voltmeter must indicate battery voltage.
 Battery voltage present?

yes

Voltage at "R"-type sheathed-element glow plug now present?

yes

Proceed on page 2 at program step "check start repeater lamp".

no

Check cable from glow-duration unit term. 3 to positive terminal of battery for open circuit.
 Eliminate open circuit.

no

Check ground cable term. 2 from glow-duration unit for open circuit.
 Eliminate open circuit.

no

Check cable from glow-duration unit term. 1 to positive terminal of battery for open circuit.
 Eliminate open circuit.

no

Replace glow-duration unit.

Continued from page 2

Check safety switch-off circuit.
Connect voltmeter to "R"-type sheathed-element glow plug and to ground. Turn glow-plug and starter switch to position St and then to position M. The voltmeter must indicate voltage for

- 16...20 seconds at an ambient temperature of 0°C
- 15...19 seconds at an ambient temperature of +10°C
- 14...18 seconds at an ambient temperature of +20°C
- 13...17 seconds at an ambient temperature of +30°C
- 12...16 seconds at an ambient temperature of +40°C.

After the specified time the voltmeter must indicate 0 V.

Voltmeter at 0 V after specified time?

no

Replace glow-duration unit.

yes

Check pre-heating when starting motor is operated.

Connect voltmeter to "R"-type sheathed-element glow plug and to ground. Turn glow-plug and starter switch to position D. Voltmeter must indicate a voltage of 6...10 V.

Voltage present?

no

1. Check cable from glow-plug and starter switch term. 50 for open circuit. Eliminate open circuit.

2. If Point 1 O.K., then replace glow-duration unit.

no

Replace "R"-type sheathed-element glow plug.

yes

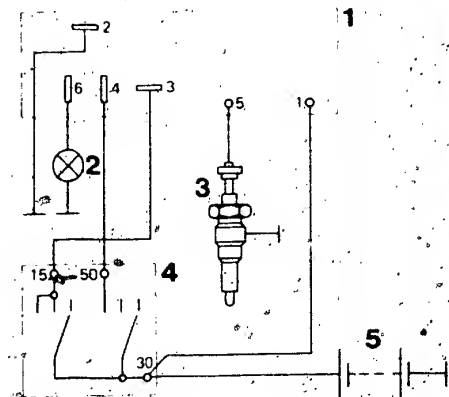
Check "R"-type sheathed-element glow plugs.
Check "R"-type sheathed-element glow plugs individually for continuity using ohmmeter.

O.K.?

yes

Pre-heating system O.K.

Terminal diagram



- 1 - Glow-duration unit
- 2 - Start repeater lamp (12 V max. 2 W)
- 3 - "R"-type sheathed-element glow plug
- 4 - Glow-plug and starter switch
- 5 - Battery

PEUGEOT 505 D TURBO, 604 D TURBO

VDT-I-PEU 024 En

with VE distributor fuel-injection pump

9.1983

VE 4/10 F 2075 R 62

With the above-named vehicles, it is possible for heavy smoke to be developed when the engine is running at idle. This is due to sooted nozzles resulting from unfavorable operating conditions.

In most cases, the fault can be remedied by taking the following measures:

Fit nozzles 0 434 250 109 (DNOSD 252) instead of nozzles 0 434 250 011 (DNOSD 1510), and set them to 150 bar. When installing, it is imperative that the heat-conducting washers PR 1981.02 and the copper seals PR 1981.05 are renewed.

New delivery-valve holders 1 463 370 342 (refer to Service-Parts Microfiche, Pos'n 58) with throttle bore dia. 0.6 mm must be fitted to the distributor pump. The delivery-valve holders can be exchanged without it being necessary to remove the pump. The pressure spring (Pos'n 56) and the spacer ring (Pos'n 57) do not have to be replaced by new ones. The tightening torque for the delivery-valve holders is 45-55 Nm.

The delivery-valve holders will be fitted as standard as from FD 347.

The replacement of the nozzles and the installation of new delivery-valve holders must be charged to the customer. This also applies during the warranty period.

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Register tab 8 vehicles
File Identity VDT-I-PEU 025 En
PEUGEOT 309 D WITH XUD 9 ENG.
Insufficient load pick-up 12.1986
at idle

Nr. 0 460 494 195

VE R **162-1**

Type 518

961 648 C123456

A

B

C

A = Works code no.
C = Serial number

B = Date of manufacture (FD)

With this vehicle, it may come about in isolated cases that load pick-up is insufficient at idle. This expresses itself through an excessive drop in idle speed, e.g., when electrical consuming devices are switched on.

The engine "shakes" and the vibrations are clearly noticeable in the passenger compartment. The same effect can arise on sudden release of the accelerator.

SERVICE INFORMATION

→

The cause of this is a faulty idle spring in the distributor-type fuel-injection pump. However, this fault can arise only in fuel-injection pumps with the works code no. 961 and which are stamped with the dates of manufacture 647 (7.1986) up to 649 (9.1986) (see figure).

The complaint can be eliminated by exchange of the idle spring in accordance with VDT-I-460/147.

Within the warranty period, this operation will be carried out for the customer free of charge.

Fuel-injection pumps which have the above-stated works code no. and date of manufacture, but also have a white dot on the control lever have already been equipped at the works with the correct idle spring and do not need attention. The complaint has other causes which must be determined.

Published by:

ROBERT BOSCH GMBH
Division KH
Technical After-Sales Service (KH/VKD2)

Please direct questions and comments
concerning the contents to our authorized
representative in your country.

SERVICE INFORMATION

←

Porsche 911 SC, 3.3 I Turbo

Ignition distributor modifications

VDT-I-POR 012 En

6. 1978

1. Ignition distributor drive

With the beginning of production of the models 911 SC and 3.3 I Turbo in August 1977, the direction of rotation of the ignition distributor was changed to counterclockwise.

In the case of vehicles manufactured up to 18 October 1977, the backlash between the driving gear on the crankshaft and the distributor drive gear can be excessive if unfavorable tolerances coincide. This manifests itself in a deviating ignition advance curve insofar as this is measured on the engine.

To remedy this situation, the distributor drive gear, starting with the date of manufacture 730, and the driving gears on the crankshaft were modified:

Vehicle	Engine number starting with
930/03 911 SC	638 1543
930/04 911 SC USA	628 0907
930/05 911 SC Japan	618 0141
930/06 911 SC California	658 0751
930/13 911 SC Sportomatic	638 9100
930/15 Japan Sportomatic	618 9044
930/61 Turbo USA	688 0001
930/62 Turbo Japan	678 2001

The Vehicles 930/60 Turbo have been converted by the vehicle manufacturer

If a replacement ignition distributor must be installed in 911 vehicles with engine numbers which are lower than those mentioned above, a special drive gear for the ignition distributor with the following Porsche service part number must be obtained from a Porsche representative or the customer should be referred directly to a Porsche representative:

Engine	Special drive gear Porsche-No.
Engines without catalytic converter	930.602.422 90
Engines with catalytic converter (911 SC USA, California, Japan)	930.602.422 91

These special drive gears have ground tooth flanks, a tip diameter of 25.1 mm and are identified with an "S" on the shank.

These special distributor drive gears may only be used in conjunction with the old driving gear on the crankshaft.

Therefore, when making replacements, care must be taken that ignition distributors with a date of manufacture starting at 730 with new driving gears are not installed in engines which have engine numbers lower than those mentioned above.

2. Advance curve

Together with the introduction of the new distributor drive gears starting with date of manufacture 730, the advance curve for the ignition distributor 0237 303 003 was also changed for the 911 SC Europe. Final setting: a crank angle of 25° instead of a crank angle of 30°.

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3. Ignition timing adjustment

911 SC Europe vehicles with the old drive system (distributor drive gear and old driving gear on the crankshaft) and the old advance curve (crank angle of 30°) may only be set to 30° before TDC at an engine speed of 6000 min⁻¹ or 0° at idle.

This also applies to new ignition distributors (crank angle of 25°) with the special drive gear when making replacements.

In the case of vehicles with the new drive system and the new advance curve as well as all other vehicles, the ignition timing adjustment shown in the following table is applicable:

911 SC	Europe	USA-Japan	California
setting	5° ± 2° before TDC	5° ± 2° before TDC	as for the USA
at engine speed	900 ± 50 min ⁻¹	950 ± 50 min ⁻¹	
check	29° ± 2° before TDC	28° ± 2° before TDC	
at engine speed	6000 min ⁻¹	6000 min ⁻¹	
vacuum hose	—	removed	
Turbo	Europe	USA-Japan	California
setting	28° before TDC	10° ± 2° before TDC	5° ± 1° after TDC
at engine speed	4000 min ⁻¹	1000 min ⁻¹	1000 min ⁻¹
vacuum hose	removed	in place	in place

The ignition timing is only to be adjusted when the temperature of the engine oil is approx. 80°C.

4. Ignition distributor comparison

Porsche vehicle	Porsche No.		Bosch No. new and old
	new	old	
911 SC without catalytic converter	930.602.021.03	00	0 237 303 003
Turbo without reactor	930.602.101.06	03	0 237 301 004
911 SC with catalytic converter	930.602.021.02	01	0 237 306 001
Turbo with reactor	930.602.101.07	04	0 237 301 005
Turbo, California	930.602.101.08		0 237 302 009

PORSCHE 928

VDT-I-POR Q15 En

Headlight vertical-aim control 0 307 550..
(Hydromechanical hand setting)

10.1979

Mounting and dismantling the hand-setting system

For additional information see Service Information VDT-I-POR 009 En of 8.78

1. General

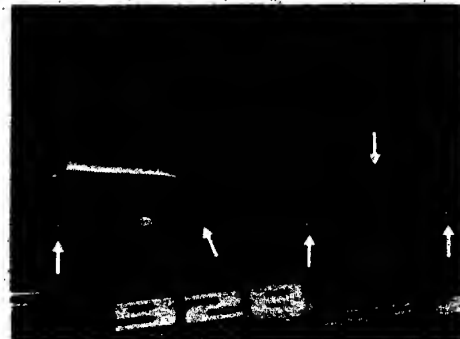
If the hand-setting system is defective (e. g. loss of fluid in the hydromechanical system) then the **complete** hand-setting system (hand-setting device, aim control element including hoses) must be replaced.

In vehicles where the cables of the hand-setting system are laid at the front left-hand side of the **wheel box**, the instructions given in Section 2 should be followed.

In vehicles of the first series in which the cables of the hand-setting system pass through the **engine compartment**, an additional modification must be carried out according to Section 3.

2. Routing of cables through the wheel box

2.1 Pull the knobs off the fader control and the handsetting device. Unscrew the fastening nut from the fader control.
Remove the pannelling, the handbrake and the handbrake cable (5 self-tapping screws - Fig. 1).



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2

2.2 Loosen the hand-setting device and pull it towards the front together with the cables (Fig. 2).



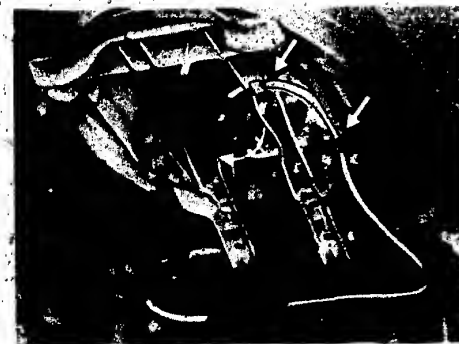
3

2.3 Unscrew the foot support in the driver's footwell (Fig. 3).



4

2.4 Remove both front wheels. Unscrew the covers in the wheel box at the front (remove only the front cover on the right-hand side).



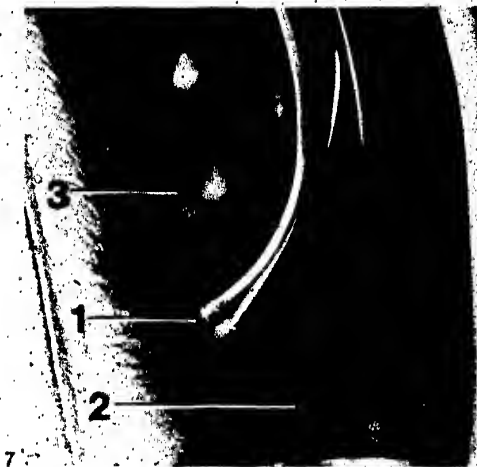
5

2.5 Tilt the headlamps forward by hand and hold them firmly. Loosen the fastening strap of the cables and turn the aim-control element of the left-hand headlamp to the left and that of the right-hand headlamp to the right (bayonet connection) (Figs. 4 and 5).

2.6 Press the retainer on the support forwards. Pull out the spacer pin with pliers (Fig. 6). Do not pull on the aim control elements.



2.7 Pull the aim control element with the cables out as far as the left-hand wheel box. Disconnect the hood-lock release-cable at the lock, loosen the cables in the wheel box and pull them through with the sleeve into the vehicle interior (Fig. 7 item 1).



- 1 = rubber sleeve for hoses and hood-lock release-cable
- 2 = control element for Tempostat (Cruise Control)
- 3 = vacuum reservoir

2.8 After mounting adjust the headlamps as described in VDT-I-POR 009 En of 8.78.

3. Modification for cables routed through the engine compartment

As a replacement part only the design for the routing of the cables through the wheel box is still available (Fig. 8). Additional modifications are therefore required.

3.1 After dismantling the aim control elements and the hand setting device, cut the cables and pull them out. The holes in the existing sleeve should be filled with a sealing compound, e.g. drip-moulding cement.

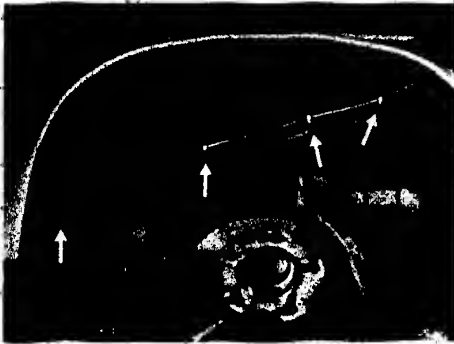
3.2 Remove the control element for Tempostat and vacuum reservoir, see Fig. 7.





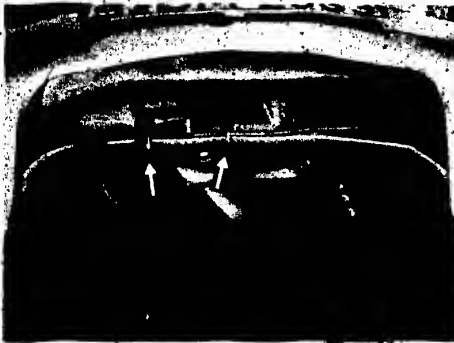
9

3.3 Bore a hole 34 mm dia. for the new sleeve underneath the vacuum reservoir with an angular drill and a boring bit (Fig. 9). Cut out the noise-insulation mat in the driver's footwell.



10

3.4 Fasten the cables in the wheel box with metal clips (Fig. 10) and under the hood-lock support with hose straps (Fig. 11). Lay the cables so that they cannot buckle or cause abrasion.



11

PORSCHE 924 TURBO } Model year 1981
924 CARRERA GT }

VDT-I-POR 017 En

3: 1981

with electronic ignition system
and K-Jetronic

Vehicle delivery for model year 1981 as from June 1980:

Engine data:	924 Turbo worldwide model	924 Turbo USA/Canada/ Japan (with K-Jetronic and Lambda closed- loop control)	924 Carrera GT
Engine type:	M 31/03	M 31/04	M 31/50
Swept volume cm ³ :	1984	1984	1984
Power kW/DIN HP at engine speed min ⁻¹ :	130/177 5,500	115/156 5,750	154/210 6,000
Ignition sequence:	1 - 3 - 4 - 2		
Ignition point at idle speed of < 900 min ⁻¹ :	8...14° BTDC	6...10° BTDC	8...14° BTDC

1. Ignition-system function:

The above listed vehicles are fitted with an electronic ignition system which has been designated by Porsche as the "DZV" (digital spark-advance).

This system is a combination of a number of devices: a microprocessor control unit (from Siemens-Hartig), a number of different pickups fitted to the engine, and a TCI hybrid trigger box (from Bosch).

Depending upon the signals from the pickups regarding

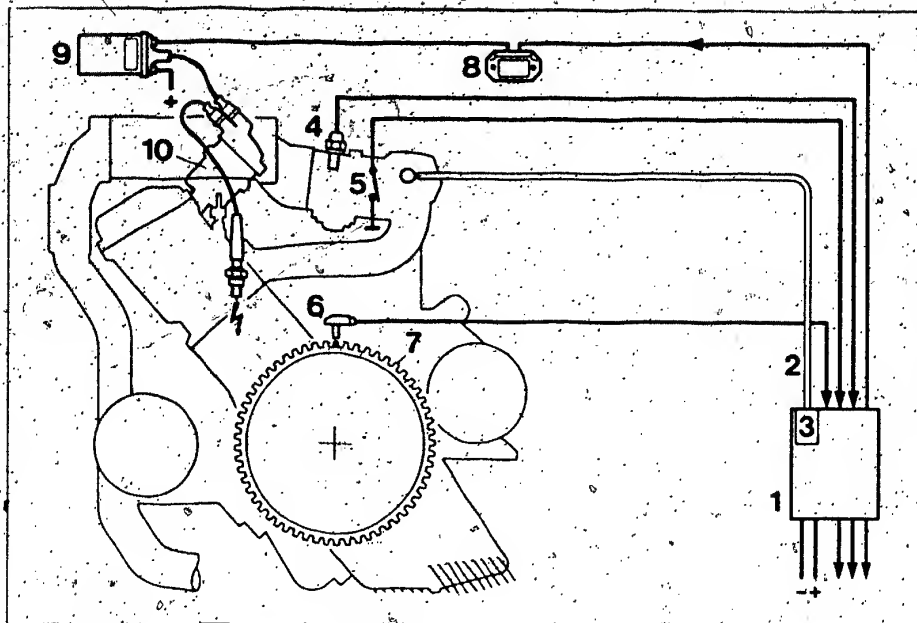
Engine speed
Throttle-valve position
Intake-air pressure or charge-air pressure
Intake-air temperature or charge-air temperature,

an ignition point is outputted from the spark-advance map stored in the microprocessor control unit. The TCI trigger box is then controlled by the trigger signal calculated from all the above data.

The breakerless ignition distributor (without vacuum and centrifugal advance mechanisms) only serves to distribute the high tension (secondary available voltage) to the individual spark plugs.

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- 1 = Electronic control unit
- 2 = Pressure line (intake-manifold pressure)
- 3 = Pressure sensor (fitted in control unit)
- 4 = Temperature sensor
- 5 = Throttle-valve switch

- 6 = Engine-speed reference-mark sensor
- 7 = Additional ring gear with "Reference-mark tooth"
- 8 = Hybrid trigger box
- 9 = Ignition coil
- 10 = Ignition distributor (High-voltage distributor)

2. Ignition point, idle-speed adjustment:

A given ignition angle is also allocated to the particular engine speed in the idle range as well. Every change in the idle speed also changes the ignition angle/ignition point. This function corresponds to an idle-speed control.

The conventional adjustment of the ignition point has been dropped with this system. Due to the fact that engine speed and ignition point change along with any change in the idle-speed air-quantity, it is only possible to precisely adjust the idle speed dependent upon the ignition point.

Detailed instructions for testing, repair and adjustment of the "DZY" are contained in the W-Publications given below.

3. K-Jetronic:

The K-Jetronic is already familiar from the Porsche 924 Turbo, Model 1979/1980. There are no differences whatsoever regarding its construction and operation.

Regarding trouble-shooting on the fuel-induction system, the following innovations should be mentioned:

Single throttle valve as opposed to the previous double throttle valve.

New injection-valve holder with improved sealing. This holder can also be fitted in older vehicles (Porsche Part).

4. Technical documentation:

- Equipment:
- Service tools for K-Jetronic:
- Basic instructions for K-Jetronic:
- Vehicle-specific instructions for K-Jetronic
- Test specifications for K-Jetronic with detailed notes on idle-speed adjustment "DZV":
- Trouble-shooting "DZV", removal and installation of the ignition distributor:

Microfiche

KD-EP 13 D...18 D

VDT-W-438/500

VDT-W-438/527

VDT-W-438/1037

In preparation

PORSCHE 928, 928 S
K-Jetronic

VDT-I-POR 019 En
12.1981

Auxiliary device for control-pressure reduction when hot-starting.
New version of fuel distributor and additional pressure damper.
New versions of warm-up regulator.
After-sales service instructions.

1. Auxiliary device for control-pressure reduction when hot-starting:

To improve the hot-starting performance, the Porsche 928 and 928 S models have been equipped since 18 February 1981 with an auxiliary device for control-pressure reduction when hot-starting.

The auxiliary device is not made by Bosch and comprises a solenoid-operated needle valve with mounting piece and corresponding connection lines. The valve is mounted on the flange of the intake tube of cylinder 3 and is hydraulically connected in parallel with the warm-up regulator. The valve is electrically energized via terminal 50 and a thermo-switch.

Operation:

When the engine is started at normal operating temperature, the control pressure of the K-Jetronic is near the shutoff point of approx. 3.6 bar gauge pressure on account of the contact heat of the warm-up regulator.

Since, after switching off the engine at normal operating temperature, it is possible for vapor bubbles to form in the fuel-injection lines, advantages can be gained from reducing the control pressure when hot-starting. The thus increased fuel delivery accelerates the process of driving the vapor bubbles out of the injection lines and therefore improves the starting ability of the engine. This reduction in control pressure is brought about by the above-mentioned control-pressure-reduction valve.

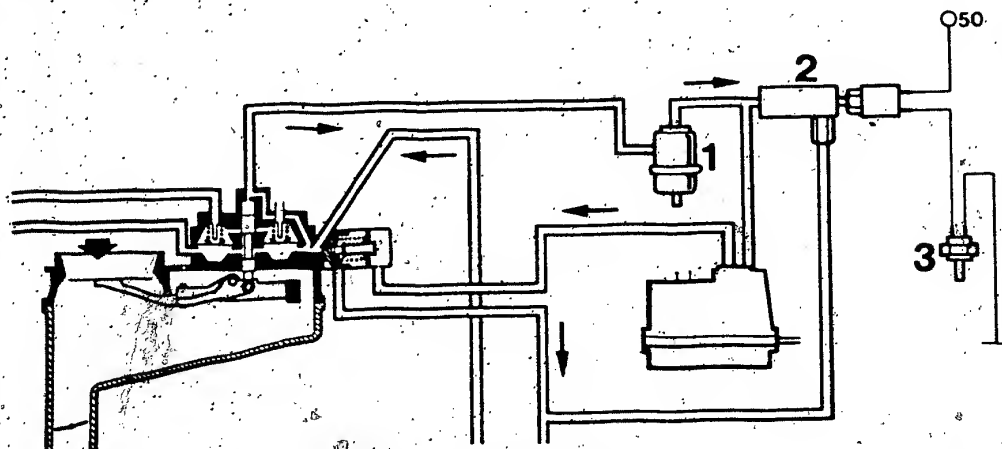


Fig. 1 1 = Fuel-line-pressure damper (see Section 2)
2 = Control-pressure-reduction valve
3 = Thermo-switch

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When open, the valve establishes a direct connection between the fuel distributor and the fuel-return line in the control-pressure circuit. This interrupts the operation of the warm-up regulator and the control pressure is reduced to approx. 0.6 bar gauge pressure.

The thermo-switch provides the ground connection to the solenoid-operated valve, and operating the starting motor provides the positive connection from terminal 50. Consequently, the control-pressure reduction is only effective at temperatures above 35°C and only when the starting motor is operated.

Important note:

The effect of a possible fault in the control-pressure reduction system should be borne in mind when troubleshooting in the vehicle (control-pressure testing, leak test on the overall system).

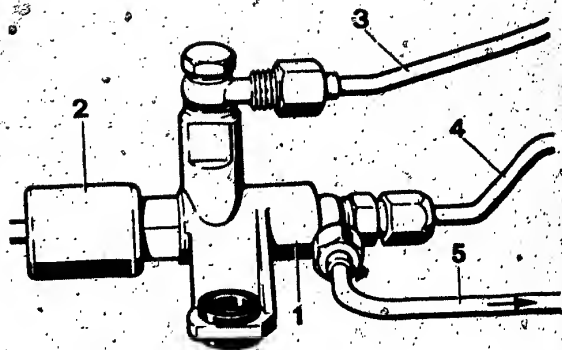


Fig. 2

- 1 = Control-pressure-reduction valve
- 2 = Solenoid
- 3 = Fuel line to fuel return line
- 4 = Fuel line from fuel distributor
- 5 = Fuel line to warm-up regulator

2. Fuel distributor with capsule valve and additional pressure damper:

As from the 1981 model year the Porsche 928 and 928 S models are equipped with a fuel distributor with a capsule valve (instead of non-adjustable flow control valve).

Operation:

The capsule valve contains a spring-loaded valve piston with restriction bore. The restriction bore has the same job as the previous non-adjustable flow control valve, namely that of damping the vibrations of the air-flow sensor plate as a result of pulsations in the air flow.

The enrichment of the air-fuel mixture necessary for acceleration is determined by the overshoot of the air-flow sensor plate and the resulting rise of the control plunger. The degree of overshoot is determined by the size of the restriction above the control plunger. In the case of rapid acceleration the valve piston in the capsule valve is lifted, thus resulting in a faster displacement of the fuel over the control plunger. This optimizes the transition response of the engine. The valve piston remains closed under slow acceleration and in all other engine operating conditions.

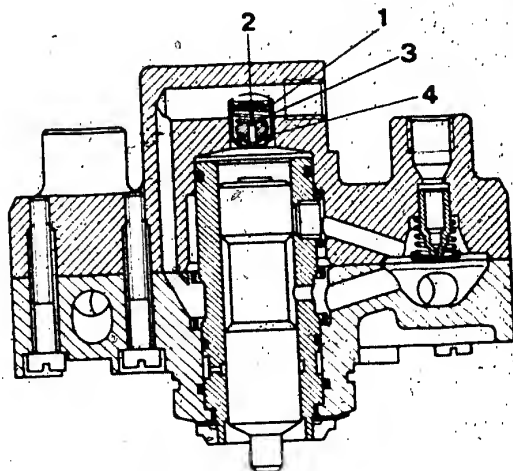


Fig. 3

- 1 = Capsule valve
- 2 = Restriction bore
- 3 = Valve spring
- 4 = Valve piston with seal ring

This modification of the fuel distributor was made without changing the part number. However, the different versions are identified by the color of the nameplate:

Fuel distributor part number: 0 438 100 027

Color of nameplate:

Fuel distributor with non-adjustable flow control valve,

earlier version: red

Fuel distributor with capsule valve,

as from 1981 model: black/red

The introduction of the fuel distributor with capsule valve also requires the installation of a fuel-line-pressure damper in the control-pressure line from the fuel distributor to the warm-up regulator.

In one of its Service Information Sheets, Porsche has informed its own after-sales service organization about the above-mentioned modifications and additions and has directed that, after stocks have been used up, exclusive use is to be made of the 1981 model fuel distributor (with capsule valve) even when replacing the fuel distributor in earlier models (1978 to 1980).

We have decided that this policy will also be adopted by the Bosch After-Sales Service Organization.

However, when converting to the new fuel distributor, it must be ensured that the fuel-line pressure damper is additionally installed.

Installation of the fuel-line pressure damper:

In addition to the Bosch pressure damper, various fasteners and connection lines are required for installation. These can be obtained from the Porsche agent. The choice of correct lines and the correct manner of connection depends on whether the engine is equipped with the auxiliary device for control-pressure reduction (see Section 1).

Parts required: (see Fig. 4)

1 = Fuel-line pressure damper	Bosch Part No.: 0 280 161 007
2 = Fuel line from fuel distributor to fuel-line-pressure damper	Porsche Part No.: 928.110.505.01
3 = Bracket	" " " 928.110.231.02
4 = Plain washer	" " " N 011.524.7
5 = Bolt M 6x12	" " " N 010.212.14
6 = Fastening clamp	" " " 999.110.525.00
7 = Fuel line from fuel-line- pressure damper to control- pressure-reduction valve	" " " 928.110.503.00
8 = Fuel line from fuel-line-pressure damper to warm-up regulator, for version without control-pressure reduction	" " " 928.110.189.05

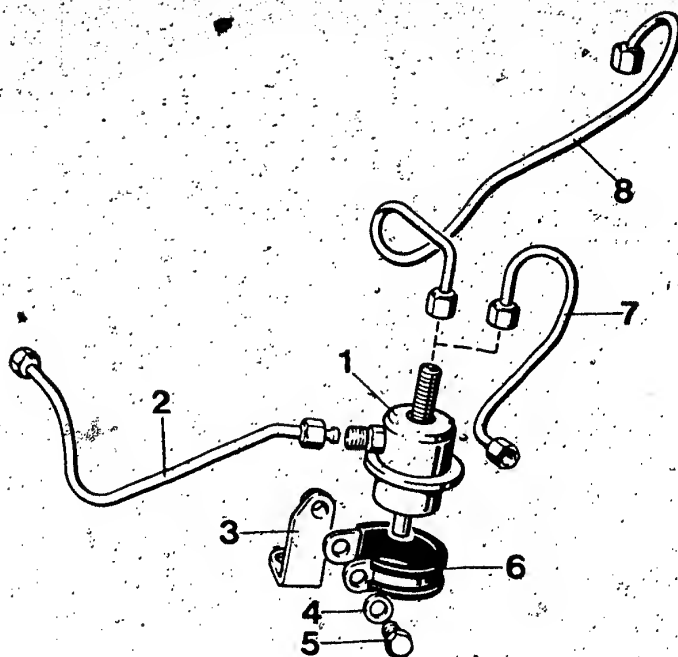


Fig. 4 Parts required with pressure damper

Installation:

- o Remove the intake tube of cylinder 4.
- o Remove the fuel line (control-pressure line) from the fuel distributor to the warm-up regulator, or from the fuel distributor to the control-pressure-reduction valve (if fitted).
- o Secure the bracket (Item 3) with the bolt of the air-flow sensor mounting hole shown by an arrow in Fig. 5.
- o Fasten the fuel-line-pressure damper (Item 1) to the bracket with the fastening clamp (Item 6), bolt (5) and washer (4). For the time being, only tighten the bolt finger-tight.
- o Install the fuel line from the fuel distributor to the fuel-line-pressure damper (side connection).
- o Install the fuel line from the fuel-line-pressure damper (top connection) to the warm-up regulator (Item 8) or from the fuel-line-pressure damper to the control-pressure-reduction valve (if fitted, Item 7).
Tightening torque for the union nuts: 20 Nm.
- o Finally tighten the fastening bolt of the fastening clamp.
- o Re-install the intake tube of cylinder 4. If necessary, use a new flange seal. Tighten the hose clamps securely.

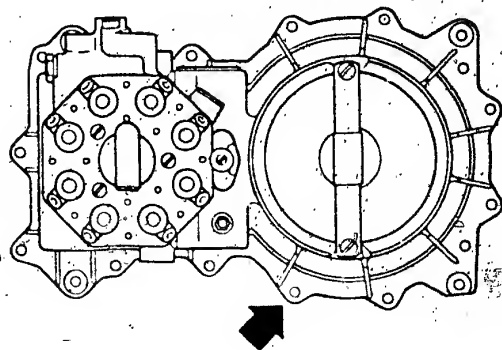


Fig. 5

3. New versions of warm-up regulator:

To improve the warm-running performance of the 928/928 S models, warm-up regulators with a modified characteristic have been installed as of the 1981 model year:

Warm-up regulator part numbers:

928: 0 438 140 087

928 S: 0 438 140 086

These warm-up regulators are provided with two separate heating resistors, one of which is triggered by a thermo-contact.

Operation:

At temperatures below 15°C the thermo-contact is open. After the engine has been started in this temperature range, therefore, there is initially only one heating resistor switched on, as a result of which the shutoff of the warm-up regulator is delayed.

When a temperature of 15°C is exceeded, either as a result of high ambient temperature or due to the heating resistor already switched on, the thermo-contact closes and switches on the second heating resistor. Both heating resistors are connected in parallel. Therefore, at temperatures above 15°C the thus increased heating effect accelerates the shutoff of the warm-up regulator.

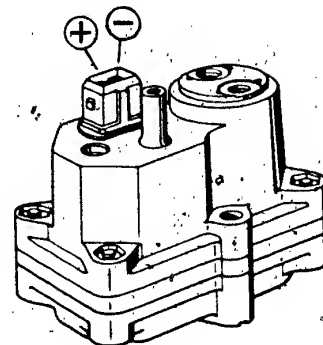
Porsche has advised its own after-sales organization to install only the above-mentioned 1981 warm-up regulators even in older vehicles (1978...1980 models), should a replacement be necessary.

We have decided that this policy will also be adopted by the Bosch After-Sales Service Organization.

In this connection, pay close attention to the following point:

In the case of warm-up regulators with a thermo-contact it is absolutely essential to ensure the correct polarity of the electric connector. Incorrect connection will cause irreparable damage to the thermo-contact.

On the 928/928 S vehicles of model years 1978 to 1980 the correct polarity is not specified. Therefore, this must be tested when installing the new warm-up regulators and must, if necessary, be corrected on the connector (+ to +, - to -).



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Fig. 6

PORSCHE 944 WITH MOTRONIC

VDT-I-POR 020 En

12.1981

Setting the PCB switch on
control unit 0 261 200 006

The PCB switch offers the possibility of influencing the spark advance and of an additional mixture adaptation.

Detailed information on the PCB switch is to be found in the Service Information sheet VDT-I-BMW 032 En.

Differences are listed below.

Important note:

In order to adapt to variations in fuel quality, the PCB switch must be set to switch position 7 (right-hand stop) for vehicles which are supplied to certain countries. This concerns the following Porsche export countries: Belgium, France, Greece, Great Britain, Portugal and Spain.

There is no change in the Bosch part number since Porsche carries out the adjustment itself for organizational reasons.

Porsche changes its own number on converted control units from 944.618.111.00 to 944.618.111.03 whereby the final digits 03 are merely stuck over the existing number.

All control units supplied by Bosch are set at the factory to switch position 0 (left-hand stop). Prior to installation of the control units in vehicles for the above-mentioned countries, the PCB switch must be set to switch position 7 (right-hand stop).

Be sure to follow the setting instructions given in Service Information Sheet VDT-I-BMW 032 En.

Use the special tool KDMT 001 for adjusting the PCB switch. Use a new cap (red) after adjusting.

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Switch position and corresponding range of application for control unit 0 261 200 006

Switch position	Adjustment range for mixture (CO)	Spark advance correction	Range of application
0 (Left-hand stop)	Basic setting = Bosch factory setting	0	General setting for countries with fuel quality above 98 RON (octane number). CO adjustable by means of air-flow sensor mixture-adjusting screw.
1	Richer + 3% (Duration of injection extended by 3%, starting from 1% CO the CO rises to approx. 2 to 2.5%)	0 (Unchanged)	Complaints: Bucking, CO not sufficiently adjustable via mixture-adjusting screw in air-flow sensor. First of all check: valve setting, idle contact, unmetered air. Increased fuel consumption can occur.
2	Leaner - 3% (Duration of injection shortened by 3%)	0	Complaints: Consumption too high, mixture too rich, adjustment by means of mixture adjusting screw in air-flow sensor not possible.
3	Richer + 6% (Duration of injection extended by 6%)	0	Complaints: As under switch position 1, but greater enriching necessary. If required, adjust idle CO via mixture-adjusting screw.
4	0 (As basic setting)	-2.76° crankshaft (Retard)	Setting for countries with fuel below 98 RON (octane number). Increased fuel consumption can occur.
5	Richer + 3% (As switch position 1)	-2.76° crankshaft (Retard)	If a correction was already set before with switch position 1, 2 or 3, the appropriate switch position 5, 6 or 7 must be set. Note in the event of possible switch resetting.
6	Leaner - 3% (As switch position 2)	-2.76° crankshaft (Retard)	
7 (Right-hand stop)	Richer + 6% (As switch position 3)	-2.76° crankshaft (Retard)	Setting for the following countries: Belgium, France, Greece, Great Britain, Portugal and Spain. Generally the range of application for switch positions 4 to 6 also applies.

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Only for use within the Bosch organization. Not to be communicated to any third party.

PORSCHE 944
with Motronic

VDT-I-POR 021 En
12.1981

As of July 1981 Porsche is installing the Motronic in the 944 model. The construction and operating principle of the Motronic are described in Technical Bulletin "New Product" VDT-I-261/2.

Testing

On account of different wiring in the control-unit plug it is not possible to use the previous Motronic test adapter ETT 018.00 (Part No.: 0 684 101 800) for testing.

As of February 1982 the After Sales Service Organisation will be provided with the universal test adapter ETT 018.01 with which the Motronic and other systems can be tested. A precise description of the test adapter is being prepared.

Urgent after-sales service cases

If problems occur on vehicles equipped with the Motronic in the period prior to the availability of the universal test adapter, please inform KH/VKD2.

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Technical After-Sales Service
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Electrical equipment

PORSCHE 911 T/S, 2.7 l,
with fuel distributor 0 438 100 017

VDT-I-POR 022 En
1.1985

Fuel distributor 0 438 100 017 can no longer be supplied.

The replacement is fuel distributor 0 438 100 006 in conjunction with parts set 1 987 911 001 (parts set must be ordered separately).

The parts set includes, among other things, an extra-long inlet-union screw for connecting the "fuel-distributor inlet" inlet union and the "start valve" inlet union.

The inlet-union screw is screwed into the fuel-distributor inlet with the inlet unions slipped on and with the copper seal rings (3 pieces) in between.

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Motor Vehicle Service Information



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VDT-I-REN 012 En

RENAULT ALPINE R5 TURBO
1980 MODEL, European version

8. 1985

supersedes Ed. 4. 1980
and W-438/1030

K-Jetronic, test specifications

Since the end of 1979 Renault has been supplying the Alpine R5 Turbo with K-Jetronic. The 1:4 l, 4-cylinder engine has a rated output of 121 kW (165 HP-DIN).

1. Equipment

With the exception of the differences listed below, the operation and construction of the K-Jetronic components used are already known and correspond to the basic model.

The fuel distributor is of 6-cylinder design due to the large fuel delivery; 2 outlets are closed.

In the air-flow sensor the bore to the idle-mixture-adjusting screw is sealed by a securing cap. See Technical Bulletin VDT-I-438/102.

Warm-up regulator for manifold-pressure-controlled full-load enrichment.

Fuel accumulator with double capacity (40 cm³).

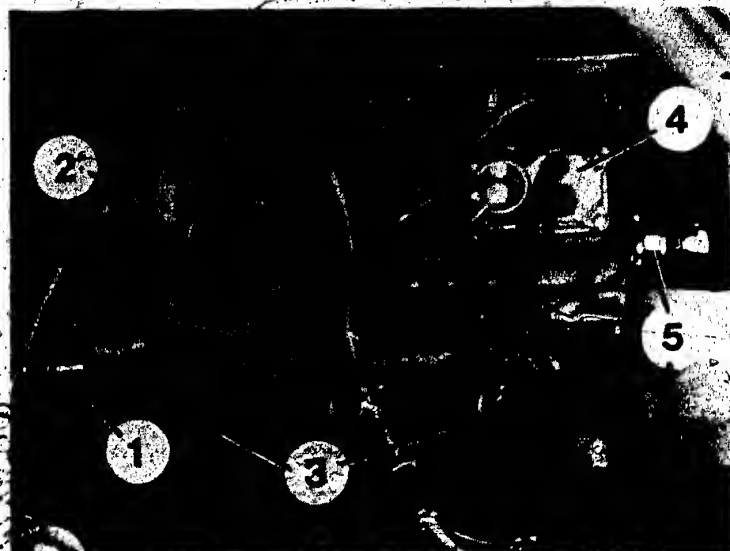
The vehicle is equipped as standard with a pre-supply pump which pumps fuel into the intermediate reservoir located in the suction line of the electric fuel pump. Connected to the intermediate reservoir is the fuel return line from the fuel distributor. The pre-supply pump and the intermediate reservoir prevent the formation of vapor locks on the suction side. The electrical safety circuit corresponds to the known version with electronic engine-speed relay energized from terminal 1 of the ignition coil. The pre-supply pump is connected in parallel with the electric fuel pump.

Motor Vehicle Service Information



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- 1 = Start valve
- 2 = Auxiliary air device
- 3 = Injection valves

- 4 = Warm-up regulator
- 5 = Thermo-time switch

2. Installation position of individual components

2.1 Engine compartment

Motor Vehicle Service Information





1 = Fuel accumulator

2 = Electric fuel pump

3 = Mixture-control unit

4 = Fuel filter

2.2 Left-hand air-guide duct

Motor Vehicle Service Information



3. Trouble-shooting and adjustment operations on the vehicle

When trouble-shooting, check the operation of the turbo-charger separately.

4. Additional information

4.1 Mounting of pressure tester KDJE-P 100 or KDEP 1034 with connecting-parts set KDJE-P 100/12 (previously KDEP 1034/12):

Mount adapter KDJE-P 100/12/1 (KDEP 1034/12/1) with seal at connection port A (3) of directional-control valve. Connect control pressure line (coming from fuel distributor) to adapter with inlet-union screw M 10 x 1 and copper seal rings. Screw connecting part KDJE-P 100/12/2 (KDEP 1034/12/1) into warm-up regulator inlet and join to connection port B (1) of directional-control valve with hose line.

4.2 Check operation of electric fuel pump. Measure the fuel delivery at the return connection of the fuel distributor using test hose, inlet-union screw M 12 x 1.5 and measuring glass.

4.3 Idle adjustment Adjust the idle speed on the throttle-valve assembly by turning the throttle lever idle stop screw. Adjust the CO at the idle-mixture-adjusting screw on the air flow sensor.

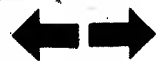
5. Test specifications

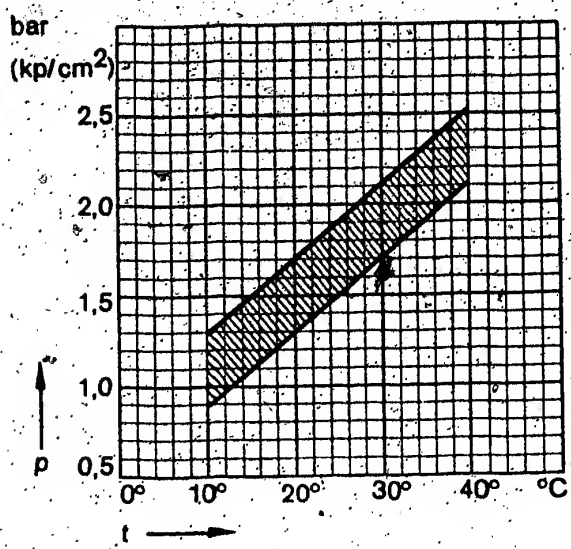
Test step

5.1 Electric fuel pump

Fuel delivery: min. 950 cm³/s
Terminal voltage: min. 11.5 V under load

Motor Vehicle Service Information





P = Control pressure t = Ambient temperature

5.2 Control pressure "cold"

For testing, connect vacuum pump to intake-manifold pressure connection port on warm-up regulator.

Setting value: 465 ... 600 mbar*
 (350...450 mm Hg)

(Warm-up regulator 0 438 140 034)

* Pressures are given in bar (gauge pressure) and kp/cm² (gauge pressure).

5.3 Control pressure "warm"

Test at atmospheric pressure (without vacuum)

2.7 ... 3.1 bar (2.8 ... 3.2 kp/cm²)*

Test with vacuum

For testing, connect vacuum pump to intake-manifold-pressure connection port on warm-up regulator.

Setting value: 465 ... 600 mbar
(350 ... 450 mmHg)

3.4 ... 3.8 bar (3.5 ... 3.9 kp/cm²)*

5.4 Primary pressure

Checking value

5.1 ... 5.8 bar (5.2 ... 5.9 kp/cm²)*

Setting value

5.3 ... 5.5 bar (5.4 ... 5.6 kp/cm²)*

5.5 Leak test

Minimum pressure

after 10 min.: 2.0 bar (2.1 kp/cm²)*

after 20 min.: 1.7 bar (1.8 kp/cm²)*

* Pressures are given in bar (gauge pressure) and kp/cm² (gauge pressure).

Motor Vehicle Service Information



5.6 Injection valves

Opening pressure *

Leak test not less than 2.3 bar:

2.5 ... 3.6 bar (2.6 ... 3.7 kp/cm²)*

No drop may fall within 25 seconds.

5.7 Idle adjustment

(Air conditioner off, engine at normal operating temperature, oil temperature approx +80°C)

Idle speed: 950 ... 1050 min⁻¹

CO concentration: 1.5 ... 2.5 vol. %

* Pressures are given in bar (gauge pressure) and kp/cm² (gauge pressure).

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Motor Vehicle Service Information



RENAULT R 4

VDI-1-REN 015 En

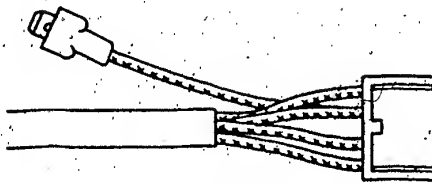
Modification of the wiper drive

4.1981

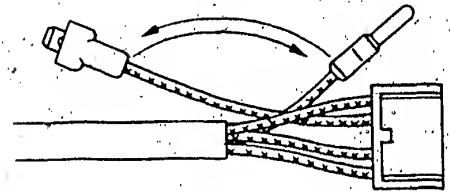
During the course of 1980 the wiper drive 3 397 020 072 was changed to .. 098 in the original equipment of the Renault R 4. The modification concerns only the plug-connection cable of the wiper motor, whereby the part number of the wiper motor is changed from 0 390 236 001 to .. 002.

When motor no. 0 390 236 001 is used up, only the new design .. 002 will be delivered. This also applies to replacement needs. If the vehicle was fitted with wiper motor no. .. 001, the plug connections must be adapted to suit the replacement motor .. 002.

To do this the cable with pin terminal coming out of the wiring harness of the new motor must be connected to the same-coloured cable which is free on the multiple plug (pink, terminal 53a). The pin terminal should be cut to make it slightly smaller.



Connector of 0 390 236 001



Connector of 0 390 236 002

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RENAULT R 18 D, R 20 TD, GTD

VDT-I-REN 016 En

7.1981

as from year of manufacture 3.1981

Auxiliary starting device with

Glow-duration unit 0 333 402 006

Power relay (12 V 20 A) Renault service part

"R"-type sheathed-element glow plug 0 250...

For additional information see "New Product" VDT-I-333/1 En.

1. Test equipment

Voltmeter

e.g. MOT 002.00 0 684 000 200

Ohmmeter

e.g. ETE 014.00 0 684 101 400

Workshop information

1. If the fuel-injection pump is incorrectly adjusted, this may considerably reduce the service life of the sheathed-element glow plug.

2. In order to prevent the glow-duration unit from being irreparably damaged, the start repeater lamp must be fitted with a 12 V max. 2 W bulb.

3. For each repeat start the glow-plug and starter switch must, in order to obtain renewed preheating, first of all be turned to position G and then to position M. This makes it possible for the safety switch-off circuit fitted in the glow-duration unit to be re-activated.

4. The specified "R"-type sheathed-element glow plugs must be used (starting difficulties)

Troubleshooting program

1. Aim of troubleshooting program
While making use of all appropriate test equipment, this program is designed to help workshop employees quickly detect causes of trouble on engines with a preheating system.

2. Test sequence

The test steps given on the left-hand side of the troubleshooting program contain test information and test specifications. If the test step has a negative outcome, consult the boxes on the right-hand side opposite for the corresponding repair instructions.

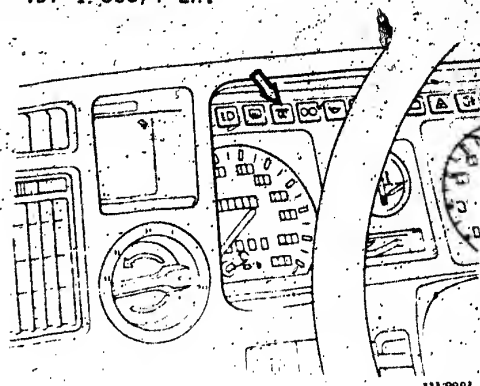


Fig. 1 Arrow = Start repeater lamp

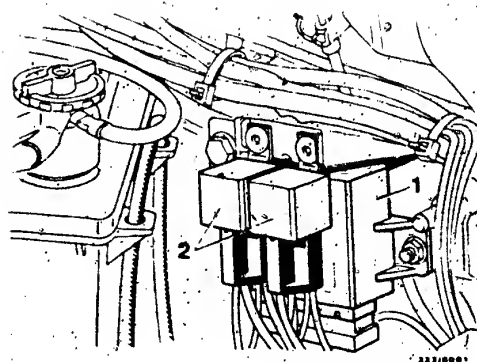


Fig. 2 1 = Glow-duration unit
2 = Power relay

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Before testing, make sure of the following:
Battery fully charged, compression O.K. (if necessary, check compression loss), fuel supply system and fuel-injection system O.K.

Starting motor turns and engine fails to start or starts only with great difficulty.

yes

Check voltage supply to sheathed-element glow plugs.

Connect voltmeter to sheathed-element glow plugs one after the other and to ground.

Turn glow-plug and starter switch to position G and then position M. Voltmeter must indicate at least 10 V.

Caution: The system switches off automatically after min. 20 seconds. If the measurement has to be repeated, then the glow-plug and starter switch must be turned to position G and then to position M.

Minimum voltage present?

no

1. If no voltage, then check for open circuit in cables from "R"-type sheathed-element glow plugs to both power relays term. 3. Eliminate open circuit. If no open circuit, then proceed on Page 3 at program step "check voltage at glow-duration unit term.15"

2. Voltage below 10 V; then check power circuit (positive terminal of battery) as well as term. 5 and term. 3 of both power relays for voltage drop. Eliminate voltage drop.

yes

Check start repeater lamp.

Turn glow-plug and starter switch to position G and then to position M. Start repeater lamp must light up.

Does start repeater lamp light up?

no

1. Check cable from glow-plug and starter switch term. 15 to glow-duration unit term. 15 and term. K including start repeater lamp for open circuit. Eliminate open circuit.

2. Check ground cable term. 31 from glow-duration unit for open circuit. Eliminate open circuit.

3. Check cable from power relay (I) term. 3 to glow-duration unit term. G for open circuit. Eliminate open circuit.

4. If Points 1 to 3 O.K., then replace glow-duration unit.

yes

Check pre-heating time.

Turn glow-plug and starter switch to position G and then to position M. The pre-heating time (start repeater lamp lit up) must be

approx. 10 seconds at an ambient temperature of 0°C

approx. 8 seconds at an ambient temperature of +10°C

approx. 6 seconds at an ambient temperature of +20°C

approx. 5 seconds at an ambient temperature of +30°C

approx. 4 seconds at an ambient temperature of +40°C.

Pre-heating time (seconds)-O.K.?

no

Replace glow-duration unit.

yes

Continued on Page 5

Continued from Page 2

Check voltage at glow-duration unit term. 15.
Connect voltmeter to glow-duration unit term. 15 and to ground.
Turn glow-plug and starter switch to position G and then to position M.
The voltmeter must indicate battery voltage.
Battery voltage present?

no

Check for open circuit in cables from positive battery terminal via glow-plug and starter switch to glow-duration unit term. 15.
Eliminate open circuit.

yes

Check voltage at glow-duration unit term. 86.
Connect voltmeter to glow-duration unit term. 86 and to ground.
Turn glow-plug and starter switch to position G and then to position M.
The voltmeter must (for a limited time) indicate approx. battery voltage.
Battery voltage present?

no

1. Check whether battery voltage is present at glow-duration unit term. 30. If battery voltage is not present, then eliminate open circuit.
2. If battery voltage is present at glow-duration unit term. 30, then replace glow-duration unit.

yes

Check voltage at both power relays term. 1.
Connect voltmeter to power relays term. 1 and to ground.
Turn glow-plug and starter switch to position G and then to position M.
The voltmeter must (for a limited time) indicate approx. battery voltage.
Battery voltage present?

no

Check cable from glow-duration unit term. 86 to power relay term. 1 for open circuit.
Eliminate open circuit.

yes

Check winding and ground cable of both power relays.
Connect ohmmeter to power relays term. 1 and to ground.
Resistance approx. 18 Ω .
Resistance O.K.?

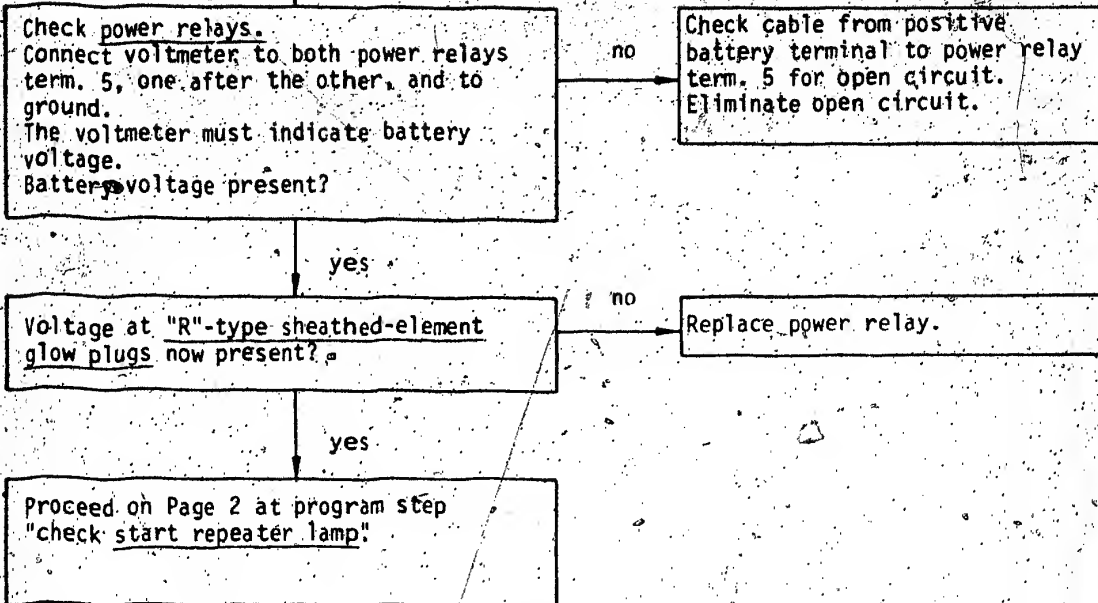
no

1. Check ground cable of power relay term. 2 for open circuit.
Eliminate open circuit.
2. If there is no open circuit, then replace power relay.

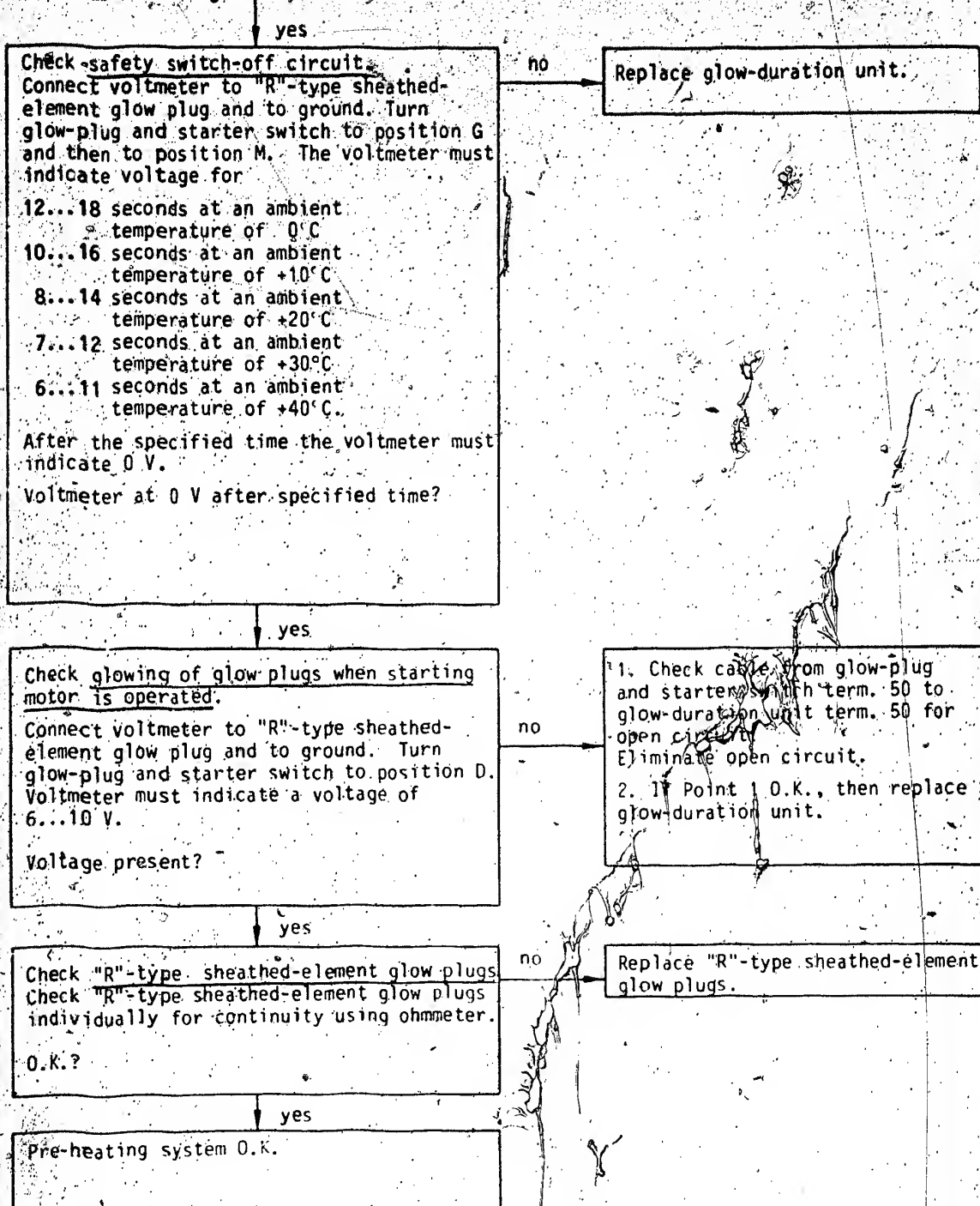
yes

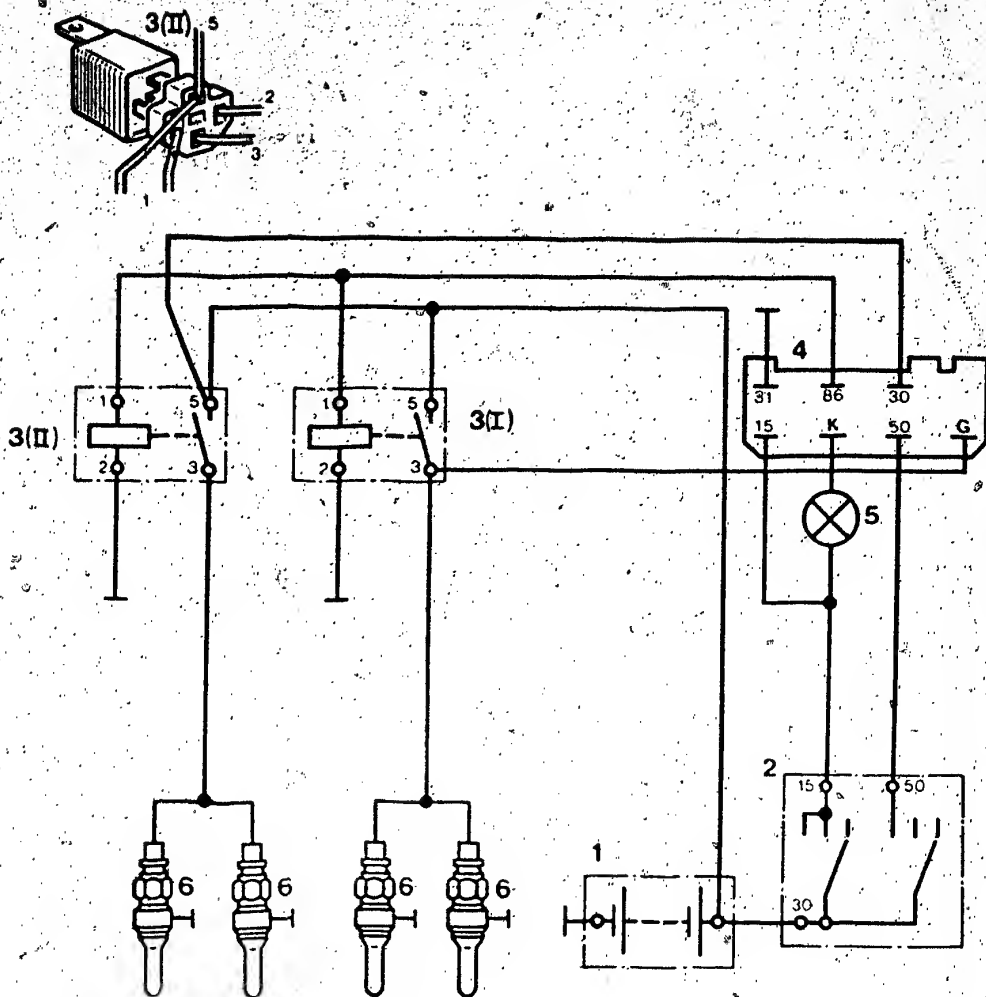
Continued on Page 4

Continued from Page 3



Continued from Page 2





Terminal diagram

- 1 Battery
- 2 Glow-plug and starter switch
- 3 Power relays I and II
- 4 Glow-duration unit
- 5 Start repeater lamp (12 V 2 W)
- 6 "R"-type sheathed element glow plugs

RENAULT 9 DIESEL

VDT-I-REN 017 En

1.1984

Knocking in part-load range

In some vehicles the engine may knock noticeably in the part-load range due to carbon-fouled nozzles.

This complaint can be remedied by installing nozzle 0 434 250 122 (DN 0 SD 189/). The nozzle-and-holder assembly should subsequently be marked with a yellow dot.

Nozzle-and-holder assemblies as of FD 350 (October 1983) are already provided with this nozzle and are identified by a yellow dot.

Replacement of nozzles is subject to payment even during the warranty period.

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SWM - MOTO-CROSS MOTORCYCLES
with Rotax-engines 125 to 250 cm³

VDI-I-SWM 001 En

8.1978

Flywheel failures (date of manufacture FD 724 to FD 726) on flywheel magneto generators 0 212 199 018)

During Moto-Cross competitions, it can happen that the flywheel hub of the magneto works loose. Normally, this fault is not to be accepted as a warranty case due to the fact that the magneto is subject to overloading during use in a Moto-Cross competition.

After having discussed the matter with the motorcycle manufacturer and the engine manufacturer, we have reached agreement on the following exception to the rule:

Loose hubs on flywheels 1 215 254 578 from the production period FD 724 to 726 can be accepted as warranty cases during a warranty period of 6 months as from date of sale.

In all cases only the parts concerned are replaced free of charge. The working time will be charged.

Loose hubs on flywheels as from FD 727 are in all cases to be rejected as warranty cases.

In this connection we would like to point out that the warranty periods given in our Conditions of Delivery do not apply to Bosch products fitted in competition vehicles. This is due to the fact that such products are subject to extreme operating conditions.

Please note that a warranty period of 3 months applies to Bosch products in SWM - Moto-Cross motorcycles in general, as from date of sale.

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Volvo Passenger Cars

VDT-I-VOL.009 B

Adapting engines to meet fuel
with lower research octane number

5. 1977

1. General

An adaptation of the engine to meet fuel with a lower research octane number is indispensable if the fuel with the research octane number specified for the engine concerned is either unobtainable or very difficult to obtain.

It must be borne in mind that a lowering of the compression pressure and adjustment of the ignition point in the "retard" direction both adversely affect engine power and torque. Furthermore, an adjustment of the ignition point in the "retard" direction leads to less efficient cooling of the engine.

2. Engine Design

"A" and "E" engines up to and including year of manufacture 1974 are designed for 97... 100 octane fuel (research octane number).

"F" engines up to and including year of manufacture 1974 are designed for fuel with a research octane number of at least 91.

"A", "E" and "F" engines manufactured in 1975 and 1976 are designed for fuel with a research octane number of at least 91.

3. Engine Adaptation

The adaptation measures necessary will depend on the export market concerned, of which there are five categories:

1. Countries with no emission-control legislation
2. European markets subject to EEC emission-control legislation (Italy, France, Belgium, Holland, Luxembourg, Denmark, United Kingdom)
3. Federal Republic of Germany
4. Sweden
5. USA

3.1. Countries with no emission-control legislation

Engines up to and including year of manufacture 1974:
Measures as per para. 4.

Engines manufactured in 1975 and 1976:
B 20, B 30: measures as per para. 4.

In all other engines the adaptation is carried out by means of an adjustment to the basic setting of the ignition point, as detailed below.

Year of manufacture	Engine	Ignition point BTDC with octane		
		93	91	87
1975	B 21 A	12°	8°	6°
	B 21 E	8°	6°	4°
	B 27 E	10°	8°	5°
1976	B 21 A	15°	12°	8° ¹⁾
	B 21 E	8°	6°	4°
	B 21 F	—	15°	12°
	B 27 A	10°	5°	— ²⁾
	B 27 E	10°	8°	5°
	B 27 F	—	10°	5°

¹⁾ Should be operated with a higher-octane fuel because of the danger of running-on.

²⁾ Must be operated with a higher-octane fuel because of the danger of running-on.

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3.2 European markets subject to EEC emission-control legislation

Engines up to and including year of manufacture 1974:
Measures as per para. 4.

Engines manufactured in 1975 and 1976:
The relevant emission-control legislation forbids an engine adaptation to meet lower-octane fuel.

3.3 Federal Republic of Germany

As from 1st January 1976 the lead content in commercially available gasoline has been reduced to a maximum of 0.15 g/l. From the same date regular gasoline has been at least 91 octane and premium gasoline at least 97.4 octane (research number).

Engines up to and including year of manufacture 1974:
The engines are designed to be operated with fuels with a high lead content and a research octane number of 97-100.

When adapting the engines to commercially available gasoline, the initial ignition timing must be adjusted by 5° in the "retard" direction. Should this not bring satisfactory results, the following measures are to be taken:

1. Adaptation as per para. 4, octane numbers 97-93
2. Exchange the timing gear (particularly advisable in engines already exhibiting considerable signs of wear).

Engines manufactured in 1975 and 1976:

The engines are designed to be operated with fuels with a high lead content and a research octane number of 93. If these engines are operated with fuels having a lower octane number, they may be damaged and "running-on" may occur; therefore it is recommended that they be operated with premium gasoline.

3.4 Sweden

Engines up to and including year of manufacture 1974:
Measures as per para. 4.

Engines manufactured in 1975 and 1976:
"A" and "E" engines are designed to be operated with 93-octane fuel, "F" engines for 91-octane fuel. An engine adaptation to meet lower-octane fuels is not relevant, since no gasoline sold on the Swedish market has an octane number of less than 93.

3.5 USA

Only carburettor engines need be adapted as per para. 4.
An adaptation of the other engine types not listed in para. 4 is not required.

4. Adaptation Data

Engine/Year of manufacture	Research octane number	Ignition point ° BTDC at 600 ... 800 min ⁻¹ without vacuum	Cylinder-head gasket ¹⁾ Thickness, uncompressed mm	Compression ratio
B 20 A				
→1971	100 ... 97	14°	2.0	8.7
	97 ... 93	12°	2.0	8.7
	93 ... 90	8°	2.0	8.7
	90 ... 85	8°	2.5	8.2
1972—1973²⁾				
	100 ... 97	14°	1.4	8.7
	97 ... 93	12°	1.4	8.7
	93 ... 90	8°	1.4	8.7
	90 ... 85	8°	1.4 and 1.2	8.0
1974³⁾				
	100 ... 97	14°	1.2	8.7
	97 ... 93	12°	1.2	8.7
	93 ... 90	8°	1.2	8.7
	90 ... 85	8°	1.2 and 1.2	8.0
B 20 B, D				
→1971	100 ... 97	10°	0.8	9.3
	97 ... 93	10°	2.0	8.7
	93 ... 90	4° ⁴⁾	2.0	9.3
	90 ... 85	4°	2.5	8.2
1972→				
	100 ... 97	10°	0.8	9.3
	97 ... 93	10°	1.2 and 0.8	8.7
	93 ... 90	4° ⁴⁾	1.2 and 0.8	8.7
	90 ... 85	4°	1.4 and 1.2	8.2
B 20 E⁵⁾				
1) 2)	100 ... 97	10°	0.8	10.5
	100 ... 97	10°	1.2	10.2
B 20 F				
	93 ... 90	10°	1.2	8.7
	90 ... 85	10°	1.2 and 1.2	8.0
B 30 A				
	100 ... 97	10°	1.2	8.7
	97 ... 93	10°	2.0	8.7
	93 ... 90	4° ⁴⁾	2.0	8.7
	90 ... 85	4°	2.5	8.2
B 30 E⁵⁾				
	100 ... 97	10°	0.8	10.0
B 30 F				
	93 ... 90	10°	1.2	8.7
	90 ... 85	10°	1.2 and 1.2	8.0

1) Inasmuch as nothing else is specified

2) Up to and including engine manufacture no.

Engine type	Engine manufacture no.
498064	— 210
250	— 101587
251	— 10626
252	— 10689
253	— 7000

3) As from engine manufacture no.

Engine type	Engine manufacture no.
498064	211 —
250	101588 —
251	10627 —
252	10690 —
253	7001 —

4) Pull off vacuum hose and close off the fitting on the intake manifold

5) When adapting engines B 20 E and B 30 E a cylinder head from a B 20 F or B 30 F engine must be fitted. In so doing cylinder-head gaskets and rubber seal rings for B 20 F (or B 30 F) must be used.

6) Engine types 498268—498271, 498066

7) Engine types 498038—498041, 498052

8) Pull the vacuum hose off the vacuum retard unit and close off the fitting on the intake manifold.

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Volvo

VDT-I-VOL 011 B

Engine B 21 E, F with K-Jetronic

10. 1977

Fuel delivery problems under hot conditions

During very hot weather or in hot regions it can occur that, under extreme operating conditions, gas bubbles form in the fuel and lead to delivery problems.

The symptoms are:

Lack of engine power, uneven engine running followed by stalling, very loud operation of fuel pump.

As a remedy, VOLVO have introduced a presupply pump. In this connection modifications have to be made to the fuel lines and possibly also to the fuel tank.

Any customers complaining of this problem should be directed to a VOLVO dealer.

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VOLVO-Penta

Marine engine TMD 40 A with VE distributor-type fuel-injection pump

VDT-I-VOL 012 B

10.1977

The new distributor-type fuel-injection pump with electromagnetic shutoff device has been used by VOLVO-Penta on the marine engine TMD since March 1977.

Engine data

6 cyl. 4-stroke diesel, whirl chamber, 96 kW (130 HP) at a rated speed of 3,600 rev/min, engine swept volume 3.59 l, firing sequence 1-5-3-6-2-4, compression ratio 20.5:1.

Fuel-injection equipment

Distributor-type fuel-injection pump
0 460 416 002 - VE 6/11 F 1800 L 19

Fuel filter

Single-stage box-type filter 0 450 133 007 - FJ/DBR-1 W 6/225 with water reservoir and drain plug. Fuel-filter box 1 457 434 061.

Nozzle-holder assembly

Nozzle-and-holder assembly consisting of:		0 432 297 032
nozzle-holder assembly	KBE 36 SD 2/13	0 431 211 999
nozzle	DNOSD 193	0 434 250 063
opening pressure		175 bar gauge pressure

Service hints

Service is provided for the VE distributor-type fuel-injection pump in the normal way. The necessary technical documents have been issued.

Caution:

This distributor-type fuel-injection pump is fitted with a solenoid-operated valve. No voltage may be applied to the solenoid-operated valve while the pump is being tested on the pump test bench. Apply voltage to the solenoid-operated valve only when testing the shutoff function.

1. Technical documents

"New product" bulletin:
VDT-460/1 B

Repair instructions:
VDT-W-460/100 B

Test instructions:
VDT-W-460/300 B and 1st Supplement

Service-parts list:
Microfiche EP-142, column E3, edition 77/1

Test specifications:
on microfiche from September 77.

Bosch equipment:
Microfiche

Service tools:
Catalog sheet KD-EP 9 B (9.76)

2. Repair and test tools

For the repair of this VE distributor-type fuel-injection pump only the tools listed in catalog sheet KD-EP 9 B (9.76) are required provided that tools for EP/VA distributor-type fuel-injection pumps are already available. These service tools should be ordered from your authorized representative.

The following additional items are required for testing:

Timing-device-travel measuring device	1 688 130 139
Intermediate piece M 8 x 1 (for adjusting the plunger lift to port closing in conjunction with the prestroke measuring device 1 688 130 045)	1 683 458 019

These items of test equipment should be ordered from your authorized representative.

3. Exchange pump

The distributor-type fuel-injection pump 0 460 416 002 has been taken into the exchange program under Index 090.

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4. Repair time

Work unit figures for the repair and testing of the VE distributor-type fuel-injection pump have not yet been issued. Maximum figure for complete dismantling 35 work units (AW).

Checking and setting with elimination of a minor fault (e.g. a leak) 16 AW. These figures are provisional.

5. Matching the injection pump to the engine

Adjustment of this distributor-type fuel-injection pump is carried out by the pointer method.

Adjustment point

Pump:

The pointer on the roller ring must align with the mark on the camplate in the timing window. This corresponds to a plunger lift of 1 mm after BDC.

Engine:

5° after TDC 1st cyl.

Please contact the VOLVO-Penta dealer in your area to ascertain the sales figures for these engines. Ensure that the necessary tools and service parts are available in good time and make it known that you are ready and willing to offer service facilities.

VOLVO - ENGINES TD 60, TD 70

Nozzle holder assemblies

VDT-I-VOL 019 En

3,1980

Replaces Ed. 1,1980

Nozzle holder assembly KBEL 95 P 9/4 is used with
nozzle-and-holder assemblies 0 432 191 855

856

862

864

865

868 to .. 872.

On various occasions pintle breakage occurred with
nozzle holder assemblies up to FD 824.

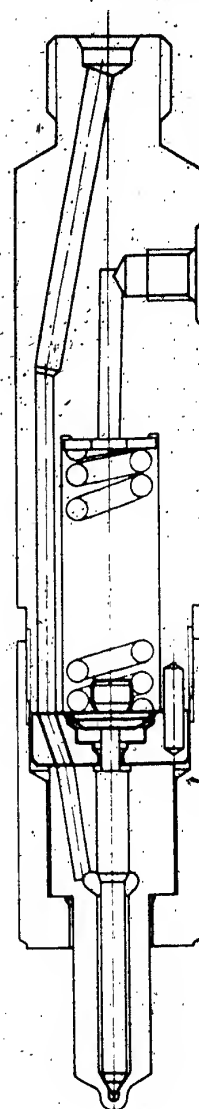
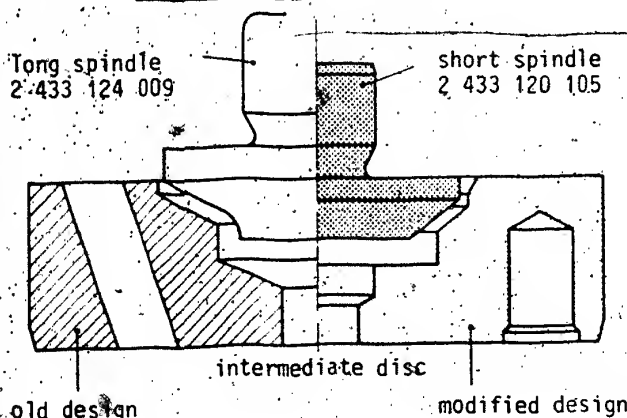
Starting with FD 825 this nozzle holder assembly will
be manufactured with shorter spindle 2 433 120 105
instead of 2 433 124 009 and modified intermediate
disc 2 430 136 078.

Interchangeability

The new, short spindle 2 433 120 105 can only be used
with the modified intermediate disc.

The old, long spindle 2 433 124 009 can be used both
with old and modified intermediate disc.

The old, non-modified intermediate disc can only be
used with the long spindle 2 433 124 009.



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When repair work is carried out, the nozzle-and-holder assemblies mentioned above, with nozzle holder assemblies up to FD 824 should be checked and only if necessary should the parts be replaced. This work will be charged for.

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IGNITION SAFEGUARD IN STARTING MOTORS AND IGNITION DISTRIBUTORS

VDT-I-VOL 020, En
4.1980

VOLVO - PENTA Marine engines

RISK OF ACCIDENT

General

The US Coast Guard Regulations for gasoline-driven boat engines demand a so-called "ignition safeguard" in the products for the electrical engine equipment. This is to make sure that explosions do not occur when operated in a combustible atmosphere.

"Ignition safeguard" characteristics

Starting motors of type

0 001 311 127

used with Volvo-Penta marine engines has ignition safeguard by means of the standard, carefully carried out sealing between the stator frame and the intermediate bearing or drive-end-bearing housing and between the stator frame and the commutator end shield.

With ignition distributor types

0 231 178 016 and . 017

the following special measures have been introduced:

- bolted distributor cap without ventilation slots, but with 2 labyrinth-type ventilation plugs in the upper part of the housing;
- round primary cable lead-through instead of rectangular;
- perforated metal plate and metal strainer ring in the lower part of the housing for sealing the housing ventilation holes (recognizable from below through the ventilation bores).

Up to FD 932 the distributor housing has a recess for an O-ring. From FD 041 the O-ring between the distributor housing and the distributor cap is dispensed with and with it the recess in the distributor housing.

Workshop instructions

During all repair and maintenance work on Volvo-Penta marine engines please see that only starting motors and ignition distributors of the above mentioned design with the ignition-safeguard characteristics are or will be fitted. Instructions for repairs see VDT-I-231/102 En for ignition distributors and VDT-W-001/103 En, Suppl. 1 for starting motors.

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VOLVO PASSENGER CAR 244/245 GL D6 (DIESEL)

VDT-I-VOL 022 En

Starting difficulties

7.1980

Until May 1980, the starting motor 0 001 362 069 was fitted in the Volvo 244/245 GL D6.

It happened in some cases that the solenoid switch on this starting motor failed due to contact oxidation at the terminal stud 30. The result is that the starting motor meshes with the ring gear but does not turn.

As from June 1980, therefore, the starting motor 0 001 362 077 is being fitted. This starting motor differs from its predecessor in that the solenoid switch at terminal stud 30 is fitted with a silver contact.

If the starting motor 0 001 362 069 fails in the manner described above, its solenoid switch is to be replaced by the version 0 331 402 039 with silver contact. The starting motor number is to be changed at the same time, by punching, to 0 001 362 077.

Warranty procedure

This is a defect which is related solely to the vehicle type concerned. For this reason, warranty claims against Bosch cannot be accepted.

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Fuel-Injection Equipment

VOLVO PASSENGER CARS	VDI-1-VOL 024 En
MODEL 240 Series D6 and MODEL 750	6.1985
VE... L32 and VE... L116	
Complaints about black smoke	supersedes 2.1984

An increase in the fuel delivery by approx. 2 ... 3 cm³/1000 strokes may lead in the above-mentioned VOLVO vehicles with these pumps to complaints about black smoke.

To remedy this fault, it is not necessary to remove the pump. It is sufficient to turn the full-load adjusting screw by 0.2 mm (approx. 1/4 turn) in a counterclockwise direction. The full-load adjusting screw should then be re-sealed with paint.

This work should be performed free of charge for the customer within the warranty period.

Motor Vehicle Service Information



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a



b



c



d

**Note:**

If the full-load delivery has been reduced by the Volvo after-sales service, the full-load adjusting screw will have been provided with a black anti-tamper device (plastic cap) which is sealed with one of the lead seals shown above:

Sealed in	Front side	Back side
Sweden	"1" seal (Picture a)	Officially registered no. of inspection agency (Picture b)
Other countries	VOLVO emblem (Picture c)	Officially registered no. of inspection agency (Picture d)

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Division KH

Technical After-Sales Service (KH/VKD 2)

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Motor Vehicle Service Information



Electrical equipment

IGNITION DISTRIBUTOR WITH LATCHING PLUG CONNECTOR IN VOLVO 343 WITH ENGINE B 19 E

WDT-I-VOL 025 En
7.1984

As of the 1983 model year, the ignition distributor 0 237 020 061 has been replaced by the ignition distributor 0 237 020 079 with the new latching plug connector.

Both ignition distributor types are identical with the exception of the plug connectors.

When, therefore, in the course of service work the ignition distributor 0 237 020 079 is installed, it is also necessary to change the connector on the wiring harness.

The part no. of the required connector parts set is:

1 237 000 045

Note:

The assignment of the "new" and "old" wiring harness connectors is identical.

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Electrical equipment

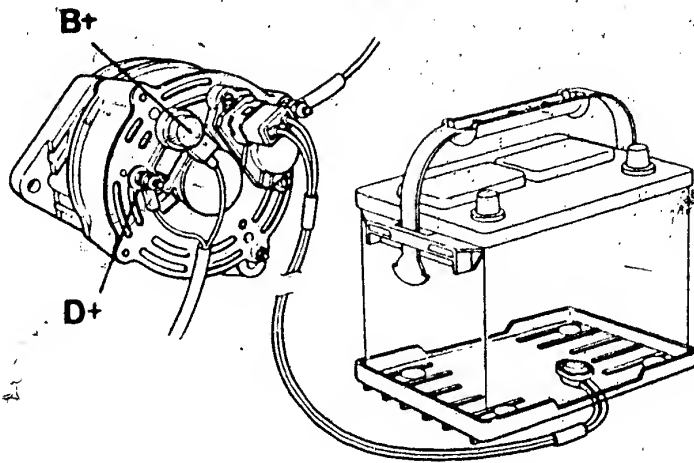
VOLVO 760 GLE

VDI-I-VOL 026 En

TEMPERATURE SENSOR 1 197 311 900

12.1985

Testing in the vehicle



General

A motortester or a multimeter and refrigerant spray are required for testing temperature sensor 1 197 311 900.

At low battery temperature the temperature sensor causes an increase in the regulated voltage and reduces the regulated voltage at high battery temperature (see VDI-I-192/4).

The engine must be at normal operating temperature, but at least 60°C oil temperature. The battery must be connected.

Motor Vehicle Service Information



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Preparations

- Loosen battery mounting and raise battery.
- Pull forward battery tray with temperature sensor under battery and lean against battery at an angle so that temperature sensor remains visible.
- Connect motortester directly to B+ and B-/alternator.

Testing without refrigerant spray

- Switch off all electrical devices not required.
- Start engine and run at high idle speed approx. 2000 min⁻¹ and note down regulated-voltage reading.

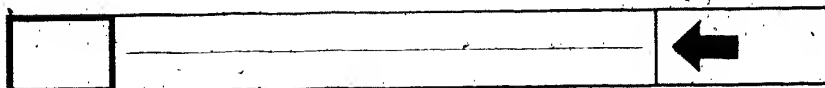
Testing with refrigerant spray

- Spray temperature sensor with refrigerant spray, while observing regulated voltage. (Coating of frost on sensor must be present during the test.)
- Regulated voltage must increase by at least 0.1 V, depending on temperature difference between measurements 1 and 2; otherwise replace defective temperature sensor.
- If regulated voltage rises above 16 V, regulator must be checked in accordance with following test instructions.

See VDT-W-192/1001 and VDT-W-120/508 for testing of regulator.

After testing, slide battery tray under battery and re-secure battery.

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VOLVO 240D, 740D AND 760TD

Register tab 12 Vehicles
File:
Identity VDT-I-VOL 027 En

with distributor-type fuel-
injection pump

05.1986

Receiving inspections performed on returned fuel-injection pumps from the above-quoted vehicles (during the warranty period) have shown that, very often, the temperature-controlled idle increase (TLA) has been incorrectly set.

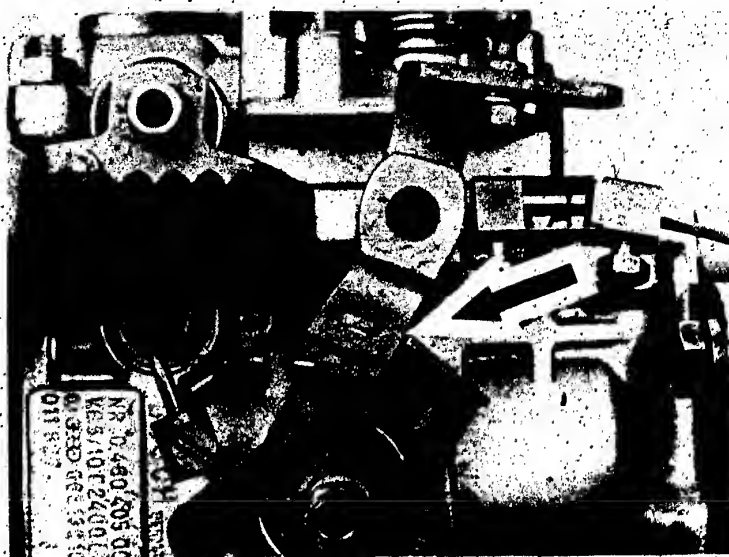
This incorrect setting results in very rough idling after cold-starting (at too low an idle speed). In addition, the engine may emit excessive blue smoke.

The cause is a change of the setting dimension of 12.7 mm measured between fulcrum lever and ball head of the TLA after the setting of the low idle speed.

If this dimension is not observed, there is a change in the increased idle speed.

To prevent the unprofitable removal of injection pumps in future, if the above-mentioned symptoms occur, first of all check the idle increase as described in the following.

| SERVICE INFORMATION |



1. Checking/adjusting the low idle speed

Connect tachometer (e.g. photoelectric) to engine.

Start engine and run at idle speed.

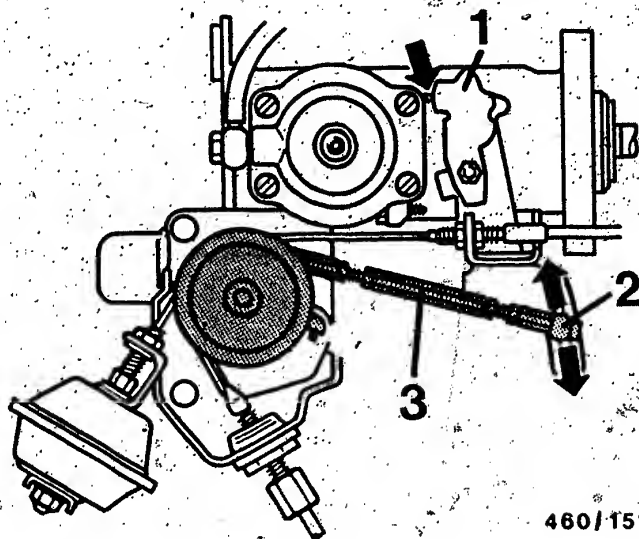
Note:

To adjust the idle speed, the engine must be at normal operating temperature.

The control lever of the cold-start accelerator must be up against the stop bracket (arrow).

Coolant temperature approx. 80°C.

SERVICE INFORMATION



460/1518

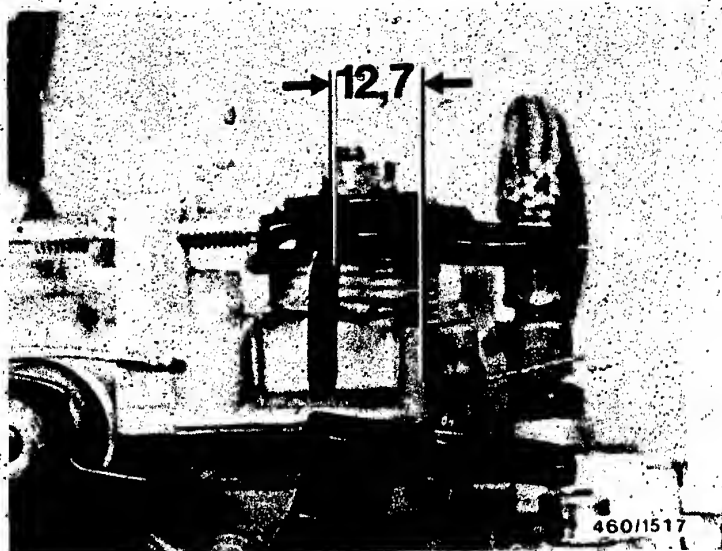
- 1 = Control lever
- 2 = Ball joint
- 3 = Connecting rod

For adjusting, the control lever of the injection pump must be up against the idle-stop screw of the pump (arrow).

Correct by changing the position of the ball joint or by turning the connecting rod.

After this correction, check the setting of the maximum-speed stop (reciprocal adjustment).

SERVICE INFORMATION



2. Checking/adjusting the temperature-controlled
idle increase

Using calliper gauge, set distance between ball
head and control lever to 12.7 mm.

Note:

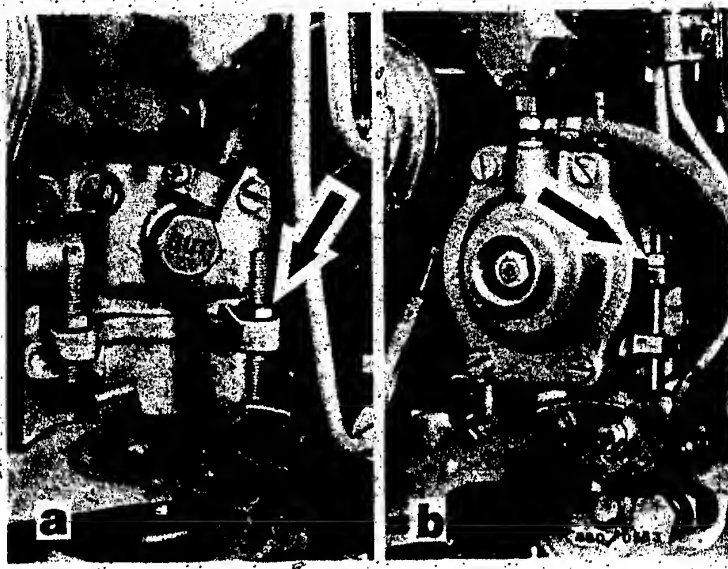
Always perform this check whenever the low
idle speed has been changed.

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SERVICE INFORMATION



Picture a = Naturally aspirated engine (D20, D24)
Picture b = Turbo engine (D24T)

Set engine speed at idle-adjusting screw (arrow) to:

D20, D24		750 min ⁻¹	#
D24T	(-1984)	750 min ⁻¹	#
D24T	(1985-)	830 min ⁻¹	#

Note that the engine camshaft and injection pump are driven at half the engine speed.

After adjusting, lock and seal adjusting screw.

Remove tachometer and stop engine.

VW Golf GTI

with K-Jetronic Starting Troubles

YDT-I-VWW 007 B

5.1977

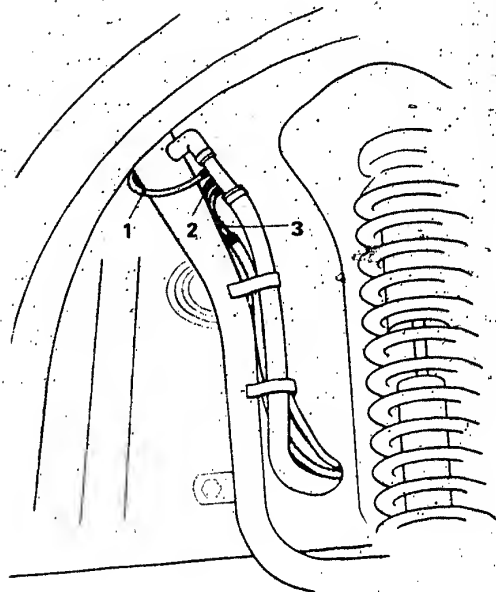
In these vehicles it can occur that the control plunger in the fuel distributor jams, due to corrosion or dirt. The result: starting troubles.

This problem can be caused by the fuel-tank-ventilation hoses not having been laid correctly: the hoses can be gradually worn through due to rubbing against the rear wheel. This allows dirt and salt water to be sucked into the fuel tank.

If such problems are suspected, the fuel-tank-ventilation hoses must be inspected to ensure that they are laid correctly; they must be repositioned by a VW agent if necessary. See drawing.

Hose 1 must be laid as short as possible, but without tension. Lay hoses 2 and 3 between the fuel-tank filler fitting and the side of the bodywork. Shorten them if necessary.

If the hoses have evidently been laid incorrectly, thus allowing water to penetrate into K-Jetronic components which have subsequently rusted and broken down, the warranty claim should be rejected.



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VW Golf Diesel

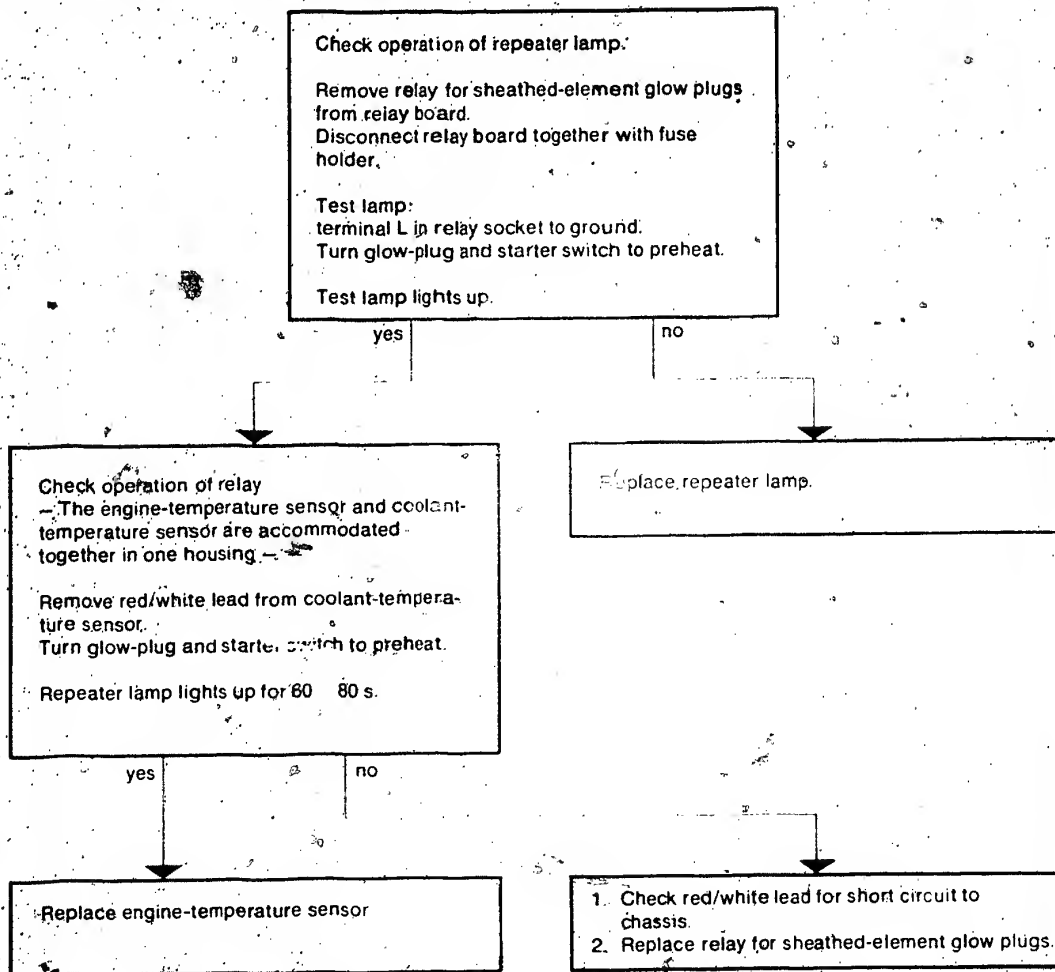
Preheating System and Indicator Trouble-Shooting Chart

VDT-I-VWW 008 B

7. 1977

These trouble-shooting instructions refer to the preheating system and preheating indicator only. The troubles listed can also be caused by mechanical defects, so Service Information VDT-I-VWW 005 B (Trouble-Shooting Chart) for the VW Golf Diesel with distributor-type fuel-injection pump must be observed in all trouble-shooting operations!

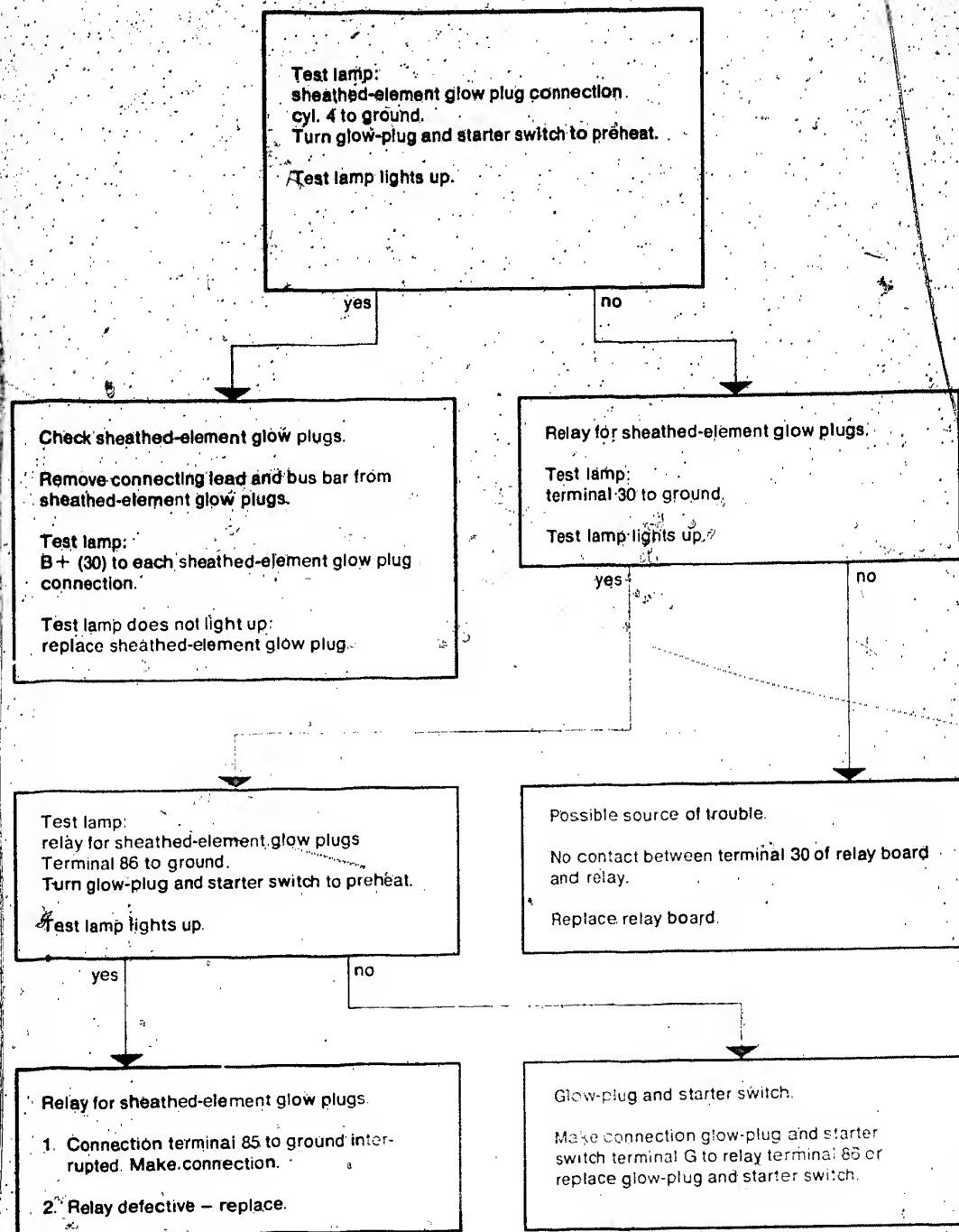
1. Preheating indicator gives no indication



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2. Preheating system does not preheat
Check current supply



This information is available only in German.
If necessary, please contact your regional
representative.

Cette information n'est disponible qu'en
allemand. Le cas échéant, veuillez vous
adresser à votre représentation régionale.

Esta información está disponible únicamente
en alemán. En caso necesario, sírvase
dirigirse a su Representación Regional.

Questa informazione è disponibile solo
in lingua tedesca. Se necessario, rivol-
gersi al proprio rappresentante di zona.

VW-Golf-Diesel

VDT-I-VWW Q14 En

with VE . . F . . -distributor-type fuel-injection pump

6.1978

Leakage at the pipe connections (fittings)
and ventilation screw

Leakages have recently been found at the pipe
connections on the hydraulic head. Leakage due to
erosion has also been ascertained.

Remedy:

If the ascertained leakage cannot be remedied by
tightening the fittings with 35 ... 45 Nm, the fitting
in question must be changed. It is not necessary
to dismantle the pump in order to do this.
When changing the fitting care must be taken that
the delivery valve is inserted back into the same
distributor outlet and that the parts are kept clean.

In addition to a new fitting 1463370 002 a new
gasket 1460105 000 should be used.

Where leakage occurs at the ventilation screw the
seal 2916710 603 should be renewed and the
ventilation screw tightened with 8 ... 10 Nm.

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VW Diesel Engines

VDT-J-VWW 016 En

with VE...F...distributor-type fuel-injection pumps

7.1978

Measuring the fitting dimension, fastening screws of the support plate.

Fitting dimension

In order to ensure that the distributor-type fuel injection pump is not subjected to stressing when fitted back onto vehicle or stationary engines after repair, the fitting dimension is to be checked and shims used, where necessary, to bring it to the correct figure of 174.2 mm (Fig. 1). Part number of the shims: 1420100014 (Pos. 229, 0.5 mm thick).

The same number of shims must be fitted under the support plate (Fig. 2, Pos. 2) for each of the 3 hexagon-socket-head cap screws (Fig. 2, Pos. 1).

If, in order to reach the specified fitting dimension, it is necessary to fit shims under the support plate, each of the 4 hydraulic-head fastening screws (3 hexagon-socket-head cap screws and 1 filler-head screw) are to be removed, and retightened evenly after the shims have been fitted. If only the

3 screws holding the support plate are removed this can result in the pump plunger being tilted and breaking as a consequence.

After the fitting dimension has been checked, all 4 screws are to be coated with locking paint.

Hydraulic-head fastening screws

It has become necessary for us point out that the fastening screws (Fig. 2, Pos. 1), are not to be loosened or removed when the pump is removed. These screws serve to fasten the hydraulic head. Loosening or removal can cause the pump plunger to tilt, and this can result in plunger breakage.

Fig. 1

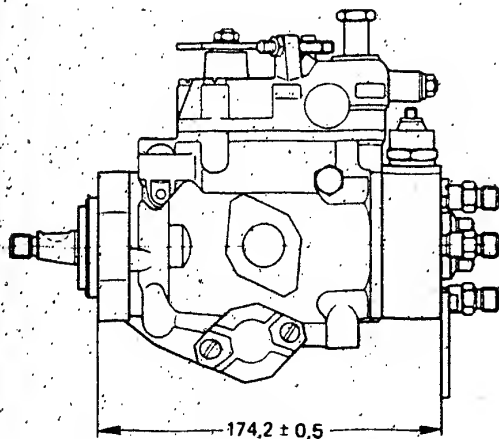
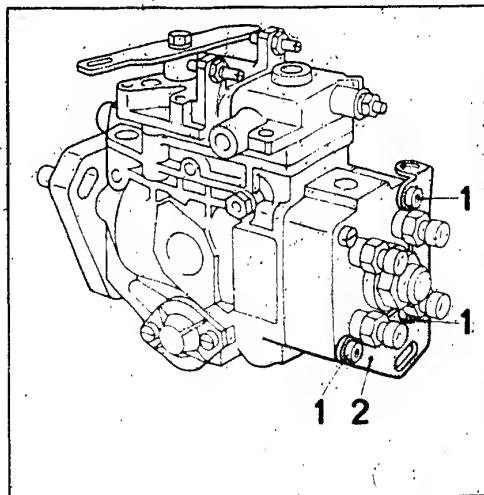


Fig. 2



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VW DIESEL INDUSTRIAL ENGINES IM 068/2

VDT-I-VW 017 En

with VE..F..-

10.1979

distributor-type fuel-injection pumps

Supersedes Ed. 4.79

On the VW diesel industrial engines, the VE..F..- distributor-type fuel-injection pump is fitted with a mechanical variable-speed governor and cold-start accelerator.

Engine data

Engines with 1.5 l swept volume as with the Golf (Rabbit) Diesel, but with reduced rated speeds of 4000 min⁻¹, 3600 min⁻¹ and 3000 min⁻¹.

Engine with 1.6 l swept volume and rated speed of 3000 min⁻¹.

Fuel-injection equipment

Engine rated speed	Distributor-type injection pump	Model
1.5 l 4000 min ⁻¹	0 460 494 010 - VE 4/9 F 2000 R 25	Works model with VW-Audi company sign and works-intern. No.
	0 460 494 011 - VE 4/9 F 2000 R 25 P	Trade model without VW-Audi company sign, oil-filled as protection against corrosion
1.5 l 3600 min ⁻¹	0 460 494 012 - VE 4/9 F 1800 R 25-1	Works model with VW-Audi company sign and works-intern. No.
	0 460 494 013 - VE 4/9 F 1800 R 25-1 P	Trade model without VW-Audi company sign, oil-filled as protection against corrosion
1.5 l 3000 min ⁻¹	0 460 494 035 VE 4/9 F 1500 R 25-3	Works model with VW-Audi company sign and works-intern. No.
	0 460 494 036 VE 4/9 F 1500 R 25-3 P	Trade model without VW-Audi company sign, oil-filled as protection against corrosion
1.6 l 3000 min ⁻¹	0 460 494 017 - VE 4/9 F 1500 R 25-2	Works model with VW-Audi company sign and works-intern. No.
	0 460 494 018 - VE 4/9 F 1500 R 25-2 P	Trade model without VW-Audi company sign, oil-filled as protection against corrosion

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Fuel filter

Single-stage box-type filter	Model	Fuel-filter box
0 450 133 009 - FJ/DBR 1 W 6/3	Works model with water-trap chamber and drain screw, without hand pump	1 457 434 094

Nozzle-holder assembly

Nozzle-and-holder assembly
0 432 217 058 (works model)
0 432 217 059 (trade model)

Comprising:

Nozzle-holder assembly
0 430 211 041 KCA 305 D 27/4

Nozzle
0 434 250 063 DN 0 SD 193

Opening pressure 130⁺⁵ bar gauge pressure

See Microfiche for complete Bosch equipment.

Notes on after-sales service

After-sales service is carried out in the normal manner for the VE..F.. distributor-type injection pump. All testing and repair work on this pump will be done by Bosch after-sales-service workshops.

Exchange pump

The distributor-type injection pumps 0 460 494 011, ..013 and ..018 have been included in the exchange program with the Index 090.

Please make every effort to ensure that your workshop carries out impeccable and speedy repair work on the fuel-injection systems of these industrial engines.

Changes in settings

On these engines it can happen that the firm equipping the engines changes the settings of the distributor-type injection pump without making the appropriate modifications to the nameplate.

In order to prevent false settings during repair, the customer must be asked about changes in the settings when he delivers the pump.

If it is impossible to ascertain exactly what changes have been made, then the pump can only be set using the Test Specifications issued by us.

In such cases, the manufacturer of the assembly of equipment is responsible for matching the pump to the equipment.

When the customer delivers such distributor-type injection pumps he is to be notified of these facts accordingly.

VW-Passat, L, GL

VDT-I-VWW 018 En

9.1978

1.3 l engine

Instructions for changing the distributor contact points

General

Since 2.1978 the Passat has been equipped with a 1.3 l engine. Due to the longitudinal fitting of the engine, the ignition distributor is not so easily accessible for service repairs. We therefore recommend that the ignition distributor be taken out when the contact set is changed.

Changing the contact set

Dismantling

To avoid damage do not clamp the ignition distributor in the vice.

Do not remove the upper bearing cap since accidental turning of the ignition distributor can damage the lower bushing.

Remove the closing cover on the distributor window. Take the contact set out through the "window" in the ignition distributor housing (Fig. 1).

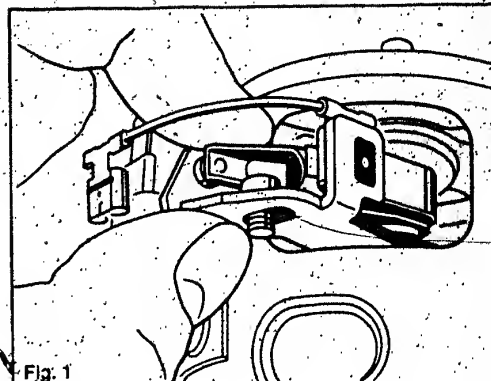


Fig. 1

Mounting

Insert the new contact set through the "window". Tighten the fastening screws approx. 2 turns.

Push the contact support by hand on the breaker-plate assembly until the bearing pin of the contact support slips in.

If the bearing pin has slipped correctly into place the contact support will come to rest at the specially provided stop bracket (Fig. 2).

In Fig. 3 (arrow) the bearing pin has not slipped in. Carry out a visual check.

Tighten slightly the fastening screw for the following dwell-angle measurement.

Mount the ignition distributor correctly and carry out the necessary adjustments. Put the closing cover back on. (Be sure of perfect fitting.)

Please note: Due to the eccentric coupling of camshaft and ignition distributor, the latter cannot be inserted the wrong way round.

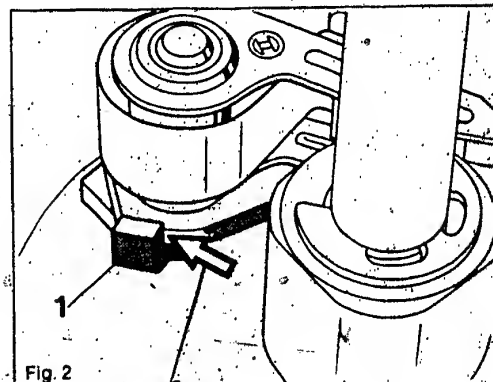


Fig. 2

1 = stop bracket.

Replacement parts

For replacement needs the special contact set for this ignition distributor with part no. 1 237 013 151 must be fitted.

N.B. Captive screw and chamfer on the bearing pin.

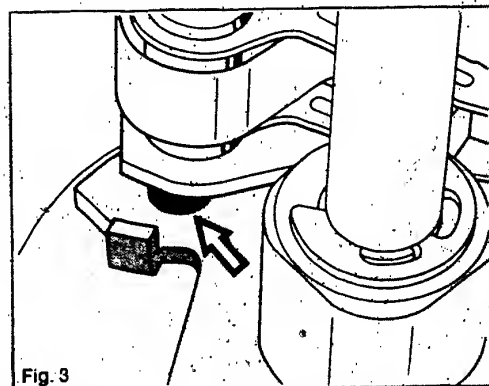


Fig. 3

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VW GOLF GTI, RABBIT, SCIROCCO GTI, GLI
with K-Jetronic

VDT-I-VWW 020.En
2.1979

In these vehicles with K-Jetronic, VW use a non-return valve screwed onto the output side of the filter between the fuel filter and the fuel distributor. The spring of the non-return valve can wear away and pieces of spring wire can get into the plunger-type pressure regulator of the fuel distributor and cause trouble. It can, for example, block the plunger-type pressure regulator or damage its O-ring.

In this case no guarantee claim can be accepted.

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VW GOLF (RABBIT) GTI, SCIROCCO GTI,
PASSAT (DASHER) GLI

VDT-I-VWW 025 En
12.1979

Hot-start difficulties

Checking the fuel accumulator

Hot-start difficulties with vehicles of the above mentioned types can be caused by faults in the fuel accumulator. The fuel accumulators concerned are 0 438 170 019 and 20 with dates of manufacture FD 924 and 925 and with works no. 050.

Fuel accumulators with date of manufacture FD 924 or 925 without works no. 050 and those with works no. 050 and with a yellow dot on the fitting side are in working order.

The accumulators which must be described as defective should be checked as follows:

Accumulators not yet fitted

Test with compressed air: Apply 4 bar pressure for approx. 5 seconds to one accumulator fitting. In doing so close off the other fitting.

Accumulators in good condition: After loosening the compressed-air connection a whistling and then a clicking noise should be heard for a few seconds.

Defective accumulators: After loosening the compressed-air connection only a whistling sound is to be heard.

Accumulators already fitted

Drive the fuel pump by bridging the electrical safety circuit (see vehicle-related test and repair instructions).

Unscrew the bleeder screw in the base of the fuel accumulator.

Using a rod as a depth measure, e.g. welding rod approx. 2 mm dia. and approx. 120 mm long, measure the depth of insertion. The fuel pump must operate for approx. 1 min. before and during the measuring procedure. The measuring rod must be inserted straight into the accumulator (if necessary remove the accumulator support).

Insertion depth: smaller than 85 mm = accumulator in working order,
larger than 92 mm = accumulator defective.

Guarantee

Claims for defective accumulators should be made as usual during the guarantee period.

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VW TRANSPORTER/BUS (TYPE 25) from 8.79
with starting motor 0 001 211 221, ..222

VDT-I-VWW 028 En

7.1980.

Difficulties with starting motor

In the above mentioned vehicles considerable corrosion damage can occur to terminals 30 and 50 of the solenoid switch

- 0 331 302 040 sales design
- 0 331 302 540 original equipment.

as well as to the contacts in the switch cover.

The starting motor can fail as a result of this.

As a remedy the terminal stud for terminal 30 will be fastened in the switch cover, from April 1980, with a rustproof spring lock washer instead of with a conical spring washer.

At the same time the distance between terminals 30 and 50 will be increased. Leakage currents which may sometimes occur are therefore avoided.

Such modified solenoid switches 0 331 302 040 are available from central stores.

Supplies of solenoid switches with FD before 044 can be used up in other starting motors (see microfiche GC-00.1).

Guarantee procedure

We are concerned here with damage to a specific vehicle. Robert Bosch cannot therefore be held liable for any claim.

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VOLKSWAGEN

VDT-1-VWV-032 En

Ignition distributor with Hall generator 0-237-02...
Modification to distributor connector
and plug housing

4.1981

Since October 1980 modifications have been made to the ignition distributor connector and the plug housing on Volkswagen vehicles. This means that in the case of replacements the new ignition distributor (with new plug housing) can no longer be connected to the old distributor connector (vehicles with wiring harness).

Remedy.

Using a file, carefully remove the two long narrow guide noses on the ignition distributor connector - old design (Fig. 1).
Please note: The new distributor connector fits into both the old and the new ignition distributor plug housing.

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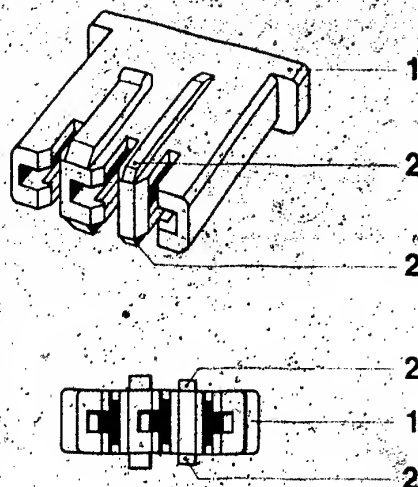


Fig. 1 - old design

1 = ignition-distributor connector
2 = long, narrow guide noses to be removed

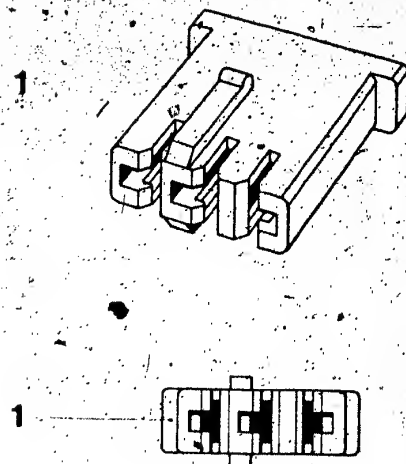


Fig. 2 - new design

1 = ignition-distributor connector
without long, narrow guide noses

VW-AUDI FORMULA "E" VEHICLES
WITH STOP-START SYSTEM,
(Non-Bosch product)

VDI-I-VWW 033 En
10.1981

As an energy-saving measure VW-Audi formula "E" vehicles have a so-called stop-start system in addition to modified transmission and aerodynamic aids.

The stop-start system consists principally of the following components:-

1. stop button on wiper switch
2. clutch-pedal switch
3. accelerator-pedal switch
4. stop-start control unit
5. speed sensor

Method of operation

The engine is switched off by pressing the stop button. This switches off first of all the idle solenoid valve on the carburetor and then the ignition. In this way fuel deposits on the cylinder walls and the washing-off of the oil film are thereby avoided.

If the engine is switched off by means of the stop-start system, the rear window heating is switched off at the same time and the headlights are switched over to side-marker lights. (a function of the stop-start control unit).

The engine is started again automatically when 1st. gear is selected, when the clutch pedal is pressed down fully (clutch-pedal switch) and when the accelerator pedal is pressed down past a certain switching point (accelerator-pedal switch). The stop-start system operates only when speed drops below 2 km/h (speed sensor).

Instructions for After-Sales Service:

For faultless starting behaviour the carburetor and ignition must be correctly set.

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VOLKSWAGEN WITH 0.9 ... 1.3 L ENGINE

VDT-I-VW 034 En

Remedy for droning noises with K1 alternators

3.1982

Droning noises can occur at certain engine speeds with the VW vehicles Polo, Derby, Golf, Jetta and Passat with 0.9 ... 1.3 l engines. We recommend fitting these vehicles with a V-belt pulley of 71 mm diameter instead of the pulleys used at present with 61 mm diameter. (The larger pulleys have part no. 1 126 600 386).

The pulleys are fitted and removed as previously with the help of a band wrench. The tightening torque for the fastening nuts is still 35...45 Nm.

Due to the different transmission ratio between the engine and the alternator, the output of the alternator is reduced particularly at idle speed.

The conversion costs which occur cannot be covered by guarantee.

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GOLF (RABBIT) GTI, JETTA LI/SE
SCIROCCO GTI, GLI

VDT-I-VWV 035. En

9.1982

Supplementary equipment set for overrun cut-off
Operational problems

After a KH supplementary equipment set for overrun cut-off (SAS) has been fitted, it can happen that when a gear is disengaged the engine sinks considerably below the specified idle speed. This can lead to the engine stopping.

Possible causes of the trouble:

- 0 Timing out of adjustment
- 0 The basic adjustment of the K-Jetronic (idle speed and exhaust-gas specs) is incorrect
- 0 The release delay on the first generation speed relay 0 280 230 102 is excessive

Remedy:

If the trouble still occurs even after the ignition and the Jetronic have been adjusted, then the first-generation speed relay must be replaced by a second-generation speed relay. Both part numbers are the same (0 280 230 102), the difference can be ascertained by means of the pin numbering:

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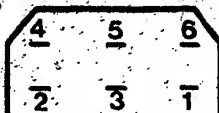
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First-generation speed relay

Top side of relay: Sticker with type: 0 438 220

Type designation: KBA 90080

Pin numbering, old:

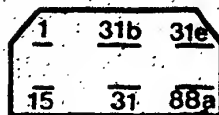


Second-generation speed relay

Top side of relay: Sprayed-on lettering, Type: 0 438 220

Type designation: KBA 90080

Pin numbering, new



Warranty

During the warranty period, defective relays are to be returned together with Warranty Application G 20 and shipping note KH/VKD 3-15333 through the RG/AV to:

Robert Bosch GmbH
5/QSG
Wareneingang
Am Boschwerk

D-7000 Stuttgart 30

For removal and installation, 2 AW (Work Units) will be credited.

The supplementary equipment sets now being delivered are all equipped with second-generation speed relays.

When you order a speed relay 0-280 230 102 only second-generation relays are delivered.

Please direct questions and comments concerning the contents to our authorized representative in your country.

GOLF GTI, SCIROCCO GLI, JETTA GLI,
AUDI 80 GLE WITH 1.8 l ENGINE

VDT-I-VW 036 En

82

Overrun fuel-cutoff -- supplementary set
New speed relay 0 280 230 108

To avoid a 1.8 l engine from cutting out due to an excessive drop in rotational speed after an overrun fuel-cutoff supplementary set 0 438 220 001, or ... 002 with speed relay 0 280 230 102 has been fitted, the points at which the speed relay switches on and off have been altered.

The switch-on speed is now 1700 min^{-1} , the switch-off speed 1500 min^{-1} . The supplementary sets will therefore be supplied as from November 1982 only with speed relay 0 280 230 108 and can also be fitted into vehicles with 1.6 l engines.

Important

Supplementary sets with speed relay 0 280 230 102 may only be fitted in vehicles with 1.6 l engine.

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VW GOLF (RABBIT) DIESEL, PASSAT (DASHER) DIESEL
with rapid-start system

VDT-1-VWW 037 En

2.1983

Cold-starting difficulties

Starting difficulties may be encountered during the cold season with the above-mentioned vehicles.

The fault is due primarily to the preheating system. Therefore, before checking the fuel-injection system and before removing the pump, test the preheating system for proper operation.

Possible cause of the trouble:

The vehicles manufactured up to approx. end of 1982 are fitted with a glow-duration relay with a preheating time (= 7 sec.) which is not always sufficient.

Consequently, the sheathed-element glow plug does not always reach the temperature necessary for starting. The fault may be accentuated by a low voltage level of the battery (drop in voltage during cranking).

Corrective action:

1. After the indicator lamp goes out, continue preheating for approx. 2 - 3 seconds and only then operate the starting motor (corrective action in case of emergency).
2. Installation of a glow-duration relay with a longer preheating time.
Part No. 0 333 402 512 as of FD 7-5182.
3. Payment procedure
Warranty cases are subject to payment if the system is of the standard-production type (glow-duration relay not from BOSCH).
In the case of vehicles which have been subsequently converted to a BOSCH rapid-start system (glow-duration relay 0 333 402 512 up to FD 7-5082) the installation of a glow-duration relay 0 333 402 512 as of FD 7-5182 must be carried out free of charge.
The usual warranty procedure applies.

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VOLKSWAGEN

Polo, Derby, Golf, Jetta
with 0.9 ... 1.3 l engines

VDT-I-VW 038 En

7. 1983

Change-over from 3-hole flange to
2-hole flange mounting for short-
type ignition distributors ZV-K
(breaker-triggered)

As of March 1982 at the request of VW, there has been a change-over in the
mounting of short-type breaker-triggered distributors.
The 2-hole-flange distributors are identical with their predecessors as regards
operation and are also identical as regards installation insofar as the inter-
mediate mounting flange on the cylinder head contains the appropriate holes.
If the intermediate mounting flange does not have the necessary holes, this must
also be replaced (VW/Audi service part, Part No. 0 52 905 289 A).

3-hole flange distributor is replaced by 2-hole flange distributor

0 231 186 023

0 231 186 042

0 231 186 037

0 231 186 045

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authorized representative in your country.

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Fuel-injection equipment

VOLKSWAGEN LT 28 D, 31 D,
35 D with 0 460 406 005, 45 D

VDT-I-VW-039 En

8:1984

Complaints about black smoke

supersedes Ed. 2:1984

In the case of vehicles listed above, it can occur with fuel-injection pumps dated before FD 246 that complaints about black smoke cannot be remedied by the measures detailed in VDT-I-Gen. 062 dated 2:1984. This is due to the fact that the delivery quantity of the injection pump has increased by more than $2...3 \text{ cm}^3/1000 \text{ strokes}$.

The reason for this is excessive wear between the plunger, the cam plate and the shim. As a result of measures in production after FD 246, this fault no longer occurs.

Remedy:

Being as it is not economically feasible to modify the pump in order to bring it to the present-day level of development, in such cases the pump must be removed and replaced by an exchange pump.

This pump replacement is to be carried out for a further period of 12 months after expiration of the warranty, in the form of a "fair deal". The costs will be reimbursed after the pump concerned has been sent in together with a Warranty Report and this has been checked. Please refer in plain text to this Technical Bulletin in the Warranty Report.

The forwarding address is:

Robert Bosch GmbH
KH/LAV 2 - Auspackraum
zur Weiterleitung an K5/OSG
Auf der Breit 4
7500 Karlsruhe 41

Motor Vehicle Service Information



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Please check your stocks of the following parts:

Hydraulic head	1 468 336 343
Cam plate	1 466 111 385
Shim	1 460 100 657 to .713

Any of the above parts which have an FD before 246 (on packing or packing slip) are also to be returned with a Warranty Claim. They will be reimbursed. Please report Warranty Code "8" (Stock Item), and re-stock through normal channels.

Published by:

Robert Bosch GmbH
Division KH
Technical After-Sales Service (KH/VKD 2)

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Motor Vehicle Service Information



Robert Bosch GmbH, After-Sales Service, Automotive Equipment.
Not to be communicated to any third party.

Register tab 12 Vehicles

File
Identity VDT-I-VW 040 En

VW-Golf and Jetta - D

IDLE-SPEED INCREASE

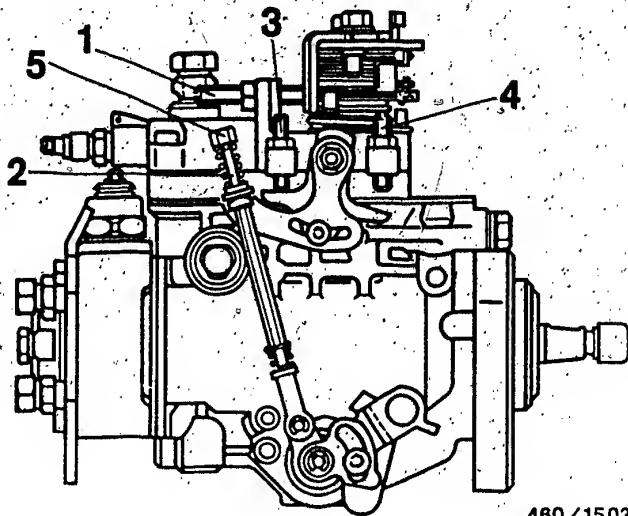
05.1986

ADJUSTMENT

To improve the operating conditions in the warm-up phase of the engine on the VW Golf and Jetta as of 1986 model year, a distributor-type fuel-injection pump with

- housing-rigid idle spring (LFG)
- idle speed increase coupled with KSB timing device has been installed.

SERVICE INFORMATION



480/1503

- 1 = Residual-delivery adjusting screw
(previous idle-speed adjusting screw
with anti-tamper cap must no longer
be turned)
- 2 = Connecting rod for idle-speed
adjustment
- 3 = Stop screw for low idle
- 4 = Stop screw for increased idle
- 5 = Cap nut

The idle speed is no longer adjusted at the
previous idle-speed adjusting screw, but by
turning the cap nut on the connecting rod.

Specification: $850 \pm 30 \text{ min}^{-1}$

- Turning the cap nut in a clockwise
direction increases the speed
- Turning the cap nut in a counter-
clockwise direction reduces the speed.

SERVICE INFORMATION



When the cold-start accelerator (KSB) is moved to stage 1 (pressure point is start of timing-device stroke), the idle speed rises by approx. 60 min^{-1} .

With the cold-start accelerator actuated all the way, the idle speed must rise to $1050 \pm 50 \text{ min}^{-1}$.

If the idle speed cannot be adjusted or if the increased idle speed is incorrect, remove the distributor-type pump and perform basic setting of the idle on the test bench.

Published by:

Robert Bosch GmbH
Division KH
After-Sales Service Department for
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SERVICE INFORMATION

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VW VEHICLES

Register tab 12 Vehicles

File

Identity

VDT-I-VW 041 En

Interruption in fuel supply

with fuel filter

7. 1986

O 450 905 066, ..091, ..093, ..601

On the above-quoted fuel filters, as of FD 550/551 the inlet has been provided with a protective countersink to prevent damage to the sealing surface.

Due to inlet-union screws of an overall length of greater than 31 mm the latter are able to rest on the inner plastic closure cap on the intake side of the filter.

As a result, the fuel flow is impeded or interrupted at this point.

Corrective action:

Replacement of inlet-union screw.

Suitable inlet-union screw: 2 911 202 703
(M14 x 1.5)

Usable Cu seal ring: 2 916 710 607

Note:

As of FD 552 the distance between the sealing surface and the inner plastic closure cap on the above-quoted fuel filters has been enlarged. As of this FD (date of manufacture) it is no longer necessary to replace the inlet-union screw.

Warranty: None

Goodwill: None

Published by:

ROBERT BOSCH GMBH

Division KH

Technical After-Sales Service (KH/VKD 2)

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Service Information

►◄

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If necessary, please contact your regional
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allemand. Le cas échéant, veuillez vous
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Questa informazione è disponibile solo
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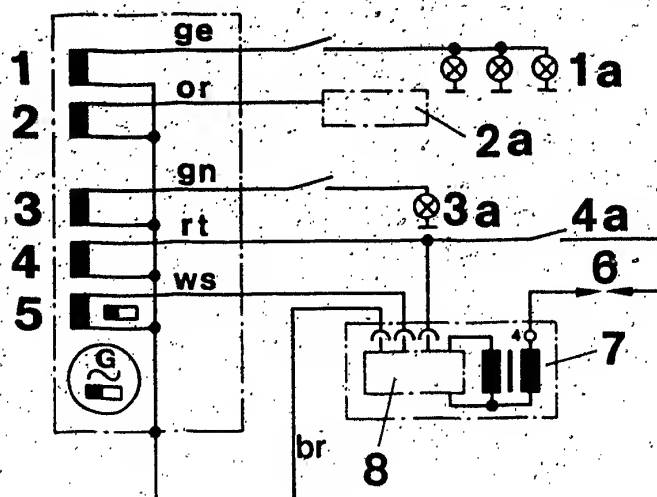
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	Register tab	1	Vehicles
ZUNDAPP VEHICLES	File		
	Identity	VDI-1-ZUN	002 En
ZS 25, CS 25, CX 25			9.1986
New magneto with separate tail-lamp winding		Supersedes ed. of	6.1985

As of engine no. 1058218 (changeover 11.83), Zündapp has been equipping the above-mentioned vehicle models with magneto 0 212 195 007.

This magneto differs from the previous version 0 212 195 001 by virtue of an additional generator armature for the tail lamp.

SERVICE INFORMATION



- 1 = Generator armature 20 W
- 1a = Main lamp 15 W, tail lamp 4 W, indicator lamp 2 W
- 2 = Generator armature 11 W
- 2a = Turn-signal flasher
- 3 = Generator armature 10 W
- 3a = Stop lamp 10 W
- 4 = Storage-capacitor-charging armature
- 4a = Engine shutoff device
- 5 = Control armature
- 6 = Spark plug
- 7 = Ignition coil
- 8 = Electronics

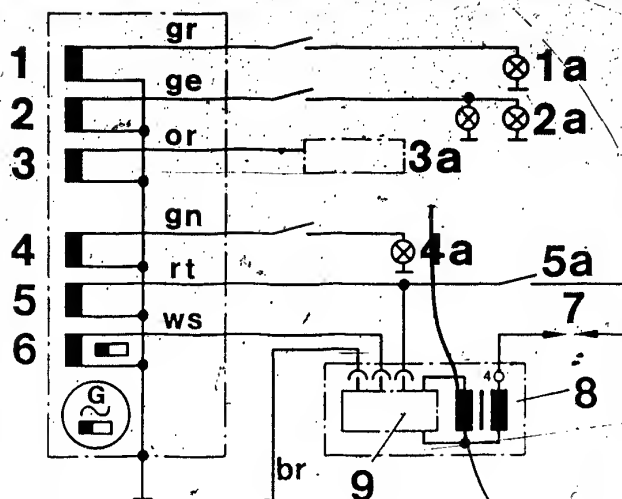
br = brown
ge = yellow
gn = green

or = orange
rt = red
ws = white

Circuit diagram

for magneto 0 212 195 001,
model RDPK 6V - 20/10/11 W
(armature base plate 1 217 031 609,
flywheel 1 215 254 754)

SERVICE INFORMATION



- 1 = Generatoranker 4 W
 1a = Schlußlicht 4 W
 2 = Generatoranker 16, 2 W
 2a = Hauptlicht 15 W, Kontrolllicht 1,2 W
 3 = Generatoranker 11 W
 3a = Blinkgeber
 4 = Generatoranker 10 W
 4a = Bremslicht 10 W
 5 = Ladegeneratoranker
 5a = Absteller
 6 = Steueranker
 7 = Zündkerze
 8 = Zündspule
 9 = Elektronik
 br = braun
 ge = gelb
 gn = grün
 gr = grau
 or = orange
 rt = rot
 w = weiß

Schaltbild

für Magnetzündler 0 212 195 007,
 Typ RDPK 6V - 16/4/0/11 W
 (Ankerplatte 1 217 031 615,
 Polrad 1 215 254 765).

SERVICE-INFORMATION

Hinweis:

Beim Einbau des Magnetzünders
O 212.195 007 in Fahrzeuge mit Motor-Num-
mer kleiner 105 8218 ist die graue Lei-
tung mit der gelben Leitung zu verbinden.

Wird dies nicht beachtet, so brennt das
Hauptlicht mit wesentlich geringerer Hel-
ligkeit.

Verantwortlich:

ROBERT BOSCH GMBH
Geschäftsbereich KH
Technischer Kundendienst (KH/WKD ?)

Anfragen außerhalb der Bundesrepublik
Deutschland sind an die jeweilige RG/AV
zu richten. Veranlasst: K1/VAK3.

SERVICE-INFORMATION